UNISYS

U 5000/30, U 5000/35, U 5000/50, and U 5000/55 System V

Software Installation Guide

Priced Item

October 1990

Printed in U S America
UP–14799

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About This Document

Purpose

This guide is designed as a tool to assist users in installing the System V operating system on the U 5000 Series hardware.

Scope

This guide helps you accomplish tasks centering around software installation. For example, it provides information and procedures for:

- Archiving and restoring files
- Installing the System V Base and Extension products on a new U 5000 Series hardware system
- Installing a Patch tape
- Booting up and shutting down the system

Audience

Although all of the procedures outlined in this guide are explained thoroughly, they should be performed by someone experienced with UNIX® operating systems, preferably a system administrator.

If you prefer to have your system installed by a Unisys® engineer, contact your Unisys representative; there is a charge for this service.

Prerequisites

This guide assumes that your U 5000 system is contained in one or more standard Unisys cabinets, and includes one or more disk units, tape units, and a system console.

Your system hardware must be installed according to procedures described in the Hardware Installation Guide prior to installing system software. If your hardware system was preconfigured, verify that all hardware components are installed (also described in the Hardware Installation Guide). Once the hardware is in place, bring up your operating system software. This guide assists you in accomplishing the task, but be aware that some operations may vary according to local procedures. We recommend that you keep a record of your activities in the following areas:

- Hardware configuration
- Software configuration of administrative files
- Specific logging and record-keeping practices
- Contacts for hardware and software problems
- Site dependent diagnostic procedures

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How to Use This Document

Read this section to get acquainted with the notation and documentation conventions. Then, read thoroughly the "Preparing for Installation" section that follows. This section identifies the four major tasks of system procedures and directs you to the sections most appropriate for the current state of your system. Read the sections or subsections prescribed by the tasks for your situation and perform the tasks as required.

Organization

This guide contains 11 sections, an appendix, a glossary, and an index.

Section 1. Preparing for Installation

This section defines the four tasks covered in this guide: first-time installation, upgrade installation, patch tape installation, and re-installation of system software. A recommended sequence of procedures for accomplishing each task is also provided. The second portion of this section provides information on planning disk partitioning for a first-time installation.

Section 2. Operating Tape and Disk Drives

This section provides instructions for storing, inserting, and removing the quarter-inch cartridge (QIC) tapes and disk drives.

Section 3. Initializing the System

This section provides procedures for turning on and starting up the system.

Section 4. Archiving and Restoring Files

This section explains why you may want to archive or restore files and provides the procedures for doing so. It also provides the procedures for backing up your release tapes.

Section 5. Installing System Software

This section provides procedures for installing the operating system software for the first time including: loading the root file system from tape, checking the file systems, creating a site kernel, and booting the operating system from a disk. It also provides procedures for upgrading your system. Finally, it provides procedures for installing and removing the Extension tape products.

Section 6. Installing a Patch Tape

This section provides procedures for installing a patch tape by using the **UNISYS MENU SYSTEM** menus.

Section 7. Shutting Down

This section provides procedures for taking the system from multiuser to single-user mode, shutting down the operating system, and turning the machine off. It also describes system response to a power outage with and without an uninterruptible power supply (UPS). Finally, it provides minimal shutdown procedures to use in an emergency situation.

Section 8. Booting Up

This section provides procedures for booting up the operating system from disk and proceeding to multiuser mode. It also provides information regarding abnormal boot up and system crash recovery.

Section 9. Formatting a Disk Device

This section provides procedures for formatting and partitioning your hard disk.

Section 10. Securing the System

This section explains why you may want to secure your system and provides the procedures for doing so.

Section 11. Restart the Installation Process

This section provides procedures for restarting the installation process if a fatal error condition occurs at any step during system software installation.

Appendix A. Crypt Utilities (Optional)

This appendix guides the user through the installation or removal of the Crypt Utilities software.

Glossary

The glossary contains the definitions of terms relating to all phases of software installation and implementation.

Index

The index provides a reference to the material in this book.

Notation Conventions

Throughout this manual, the following notation conventions are used.

User Input	User input (such as commands, options, arguments to commands, and programming samples), environment variables, and the names of directories and files appear in the bold typeface shown at the left.
Variable User Input	Names of variables to which values must be assigned (such as passwords) appear in the bold italic typeface shown at the left.
System Output	System output (such as prompt signs and responses to commands) appears in the typeface shown at the left.
Variable System Output	System output that varies (such as filenames that change) appears in the italic typeface shown at the left.
Menu Titles and Selections	Menu titles and selections appear in the bold typeface shown at the left.
xxx XXX	The symbols *xxx* and *XXX* represent numbers and characters that may vary when performing program procedures in this guide. The *xxx* and *XXX*, which are printed in italic typeface, are used interchangeably to simulate variable system output.
< >	Input that does not appear on the screen when typed (such as passwords, tabs, or carriage returns) appears between angle brackets.

< Ctrl > char Control characters do not appear on the screen when typed. To type a control character, hold down the control key while you type the character specified by **char**. For example, the notation **< Ctrl > d** means to hold down the control key while pressing the **d** key; the letter **d** does not appear on the screen.

[ ] Command arguments that are optional, such as [**-msCj**], are enclosed in square brackets.

| The vertical bar separates optional arguments from which you may choose one. For example, when a command line has the following format:

command [***arg1*** | ***arg2***]

You may use either ***arg1*** or ***arg2*** when you issue the ***command.***

... All ellipsis placed after an argument means that more than one argument may be used on a single command line.

command(number)

A command name followed by a subclass number in parentheses (**ed**(1), for example) identifies the reference manual page where the command is described. In this release, manual pages are arranged by subclass numbers in three reference manuals as follows:

User's Reference Manual - 1, 1B, 1C, 1G, and 1M
Administrator's Reference Manual - 1M, 7, and 8
Programmer's Reference Manual - 1, 1B, 1G, 1M, 2, 3, 3C, 3F, 3M, 3N, 3S, 3W, 3X, 4, and 5

commands — When the full pathname of a command is shown in an example (such as **/etc/fsck**), the command must be entered that way.

System Command Line Prompts

A prompt at the command line indicates that the system is ready for input. While a command is running, no command line prompt is visible. When the command completes, the appropriate prompt reappears. The appearance of a command line prompt on the screen indicates that the system is ready to accept another command.

— Is the root or superuser prompt. The **root** user has both user ID and group ID number 0, and can create or destroy all files, directories, or processes on the system.

$ — Is the ordinary (non-superuser) prompt. The ordinary user does not have special root or superuser privileges.

% — Is the C-shell prompt for ordinary users (non-superusers). Access to the C-shell environment is obtained with the **csh** command.

Related Product Information

Administration Guide
Administrator's Reference Manual
Getting Started
Menu System Operations Guide

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Section 1
Preparing for Installation

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Section 1
Preparing for Installation

Introduction

This guide has been developed for users performing four tasks related to software installation. These tasks are first-time installation, upgrade installation, patch tape installation, and re-installation of system software. These four tasks are defined in the following text. Decide which task you want to accomplish and perform the recommended procedure sequence. Note that the section and subsection(s) containing each procedure are also identified.

First-time Installation: Installation of the System V operating system software for the first time on a new U 5000 hardware system is outlined in Table 1-1.

Table 1-1. First-time Installation Procedures

Procedures	Section/Subsection Reference	Comments
1. Read the information in this section.	Section 1, "Introduction" and "Planning Hard Disk Formatting and Partitions"	Be sure to decide how many partitions to create on your hard disk and how large each partition should be.
2. Insert the Base tape.	Section 2, "How to Insert a Cartridge Tape"	You should also read other subsections in Section 2 if you are not familiar with tape handling and labeling.
3. Perform the power-up and booting from tape sequences.	Section 3, "Powering Up the System" and "Turning on the Power"	
4. Install the System V Base software.	Section 5, "Introduction" and "Installation Using the INSTALL SYSTEM Option"	The first-time installation procedure destroys the contents of the **root** file system. Use these procedures for a first-time installation.
5. Install the System V Extension software.	Section 5, "Installing Extension Tape Products"	The Extension tape software is optional. You may install this software any time the system is in single-user mode. Section 5 also contains instructions for removing Extension software should you ever want to do so.
6. Install the Crypt Utilities software.	Appendix A, "Crypt Utilities (Optional)"	The Crypt Utilities software is optional. You may install this software any time the system is in single-user mode. Appendix A also contains instructions for removing Crypt Utilities software should you ever want to do so.

Table 1-1. First-time Installation Procedures (cont.)

Procedures	Section/Subsection Reference	Comments
7. (Optional) Install other software products.	Refer to the documentation that accompanies these software products for specific installation procedures.	You may install other software products such as Remote File Sharing (RFS), RM/COBOL™, and NET-5000 any time the system is in single-user mode.
8. (Optional) Make a backup of your release tapes.	Section 4, "Backing Up Release Tapes"	Backing up release tapes is optional. It is recommended you do so now.
9. (Optional) Take the system to multiuser mode.	Section 8, "Bringing the System to Multiuser Mode" and "Bringing the System to Multiuser Mode Using Menus"	Installing software is done in single-user mode. After installation is complete and you have backed up your release tapes, the system may be taken to multiuser mode and made available to all users.

Upgrade Installation: An upgrade installation takes an existing operating system to a new level of functionality by installing a new Unisys operating system product. An example is installing Release Level 3.0 software on a system currently at Release Level 2.01. An upgrade installation is much more extensive and uses a raw or destructive installation procedure. To perform an upgrade installation follow the procedures outlined in Table 1-2.

Table 1-2. Upgrade Installation

Procedures	Section/Subsection Reference	Comments
1. Bring system to single-user mode.	Section 7, "Going from Multiuser to Single-User Mode" and "Going from Multiuser to Single-User Mode Using Menus"	If your system is in multiuser mode, use the procedure in Section 7.
2. Archive appropriate files.	Section 4, "Archiving and Restoring Files"	You must archive all user files before proceeding with an upgrade using the 'install' option.
3. Read the information in this section.	Section 1, "Planning Hard Disk Formatting and Partitions"	Be sure to decide how many partitions to create on your hard disk and how large each partition should be.
4. Insert the Base tape.	Section 2, "How to Insert a Cartridge Tape"	You should also read other sections in Section 2 if you are not familiar with tape handling and labeling.
5. Perform the boot up sequence.	Section 8, "Booting Up"	
6. Install the System V Base software.	Section 5, "Introduction" and "Installation Using the INSTALL SYSTEM Option"	The installation procedure using the 'install' option destroys the data on the **root** file system. Use these procedures only after first archiving all user files on the **root** file system to tape.

Table 1-2. Upgrade Installation (cont.)

Procedures	Section/Subsection Reference	Comments
7. (Optional) Install the System V Extension software.	Section 5, "Installing Extension Tape Products"	The Extension software is optional. You may install this software any time the system is in single-user mode.
8. (Optional) Install the Crypt Utilities software.	Appendix A, "Crypt Utilities (Optional)"	The Crypt Utilities software is optional. You may install this software any time the system is in single-user mode. Appendix A also contains instructions for removing Crypt Utilities software should you ever want to do so.
9. Install other software products.	Refer to the documentation that accompanies these software products for specific installation procedures.	You may install other software products such as RFS, RM/COBOL, and NET-5000 any time the system is in single-user mode.
10. (Optional) Make a backup of your tapes.	Section 4, "Backing Up Release Tapes"	Backing up release tapes is optional. It is recommended you do so now.
11. (Optional) Take the system to multiuser mode.	Section 8, "Bringing the System to Multiuser Mode" and "Bringing the System to Multiuser Mode Using Menus"	Installing software is done in single-user mode. After installation is complete and you have backed up your release tapes, the system may be taken to multiuser mode and made available to all users.

Patch Tape Installation: To install software patch tape products on an existing system follow the procedures outlined in Table 1-3.

Table 1-3. Patch Tape Installation

Procedures	Section/Subsection Reference	Comments
1. Bring the system to single-user mode.	Section 7, "Going from Multiuser to Single-User Mode" and "Going from Multiuser to Single-User Mode Using Menus"	If your system is in multiuser mode, use the procedure in Section 7.
2. Install the Patch tape software.	Section 6, "Installing Patch Tape Products"	You may install the Patch tape software at any time. Section 6 contains instructions for removing Patch tape products should you ever want to do so.
3. (Optional) Make a backup of your release tapes.	Section 4, "Backing Up Release Tapes"	Backing up release tapes is optional. It is recommended you do so now.
4. (Optional) Take the system to multiuser mode.	Section 8, "Bringing the System to Multiuser Mode" and "Bringing the System to Multiuser Mode Using Menus"	Installing software is done in single-user mode. After installation is complete and you have backed up your release tapes, the system may be taken to multiuser mode and made available to all users.

Re-installation of System Software: To re-install the operating system software after disk corruption due to power failure, etc., follow the procedures outlined in Table 1-4.

Caution

Re-installation using the INSTALL SYSTEM option is a destructive or raw installation which destroys all data on the **root** file system. Use this procedure only after archiving all data on the **root** file system to tape.

Table 1-4. Re-installation of System Software

Procedures	Section/Subsection Reference	Comments
1. Bring the system to single-user mode if in multiuser mode.	Section 7, "Going from Multiuser to Single-User Mode" and "Going from Multiuser to Single-User Mode Using Menus"	
2. Archive files if possible.	Section 4 "Archiving and Restoring Files"	You must archive all user files in the **root** file system before proceeding with a re-installation using the 'INSTALL SYSTEM' option. The 'INSTALL SYSTEM' option is a destructive installation which destroys all data on in the **root** file system.
3. Read the information in this section.	Section 1, "Planning Hard Disk Formatting and Partitions"	Be sure to decide if you want to reformat and repartition your disk and, if so, how many partitions to create on your hard disk and how large each partition should be.
4. Insert the Base tape.	Section 2, "How to Insert a Cartridge Tape"	You should also read other subsections in Section 2 if you are not familiar with tape handling and labeling.
5. Perform the boot up sequence.	Section 8, "Booting Up"	
6. Install the System V Base software.	Section 5, "Installation Using the INSTALL SYSTEM Option"	If you install the Base software using the 'INSTALL SYSTEM' option, remember that this procedure destroys al data on the **root** file system. Use this procedure only after first archiving all user files on the **root** file system to tape.

Table 1-4. Re-installation of System Software (cont.)

Procedures	Section/Subsection Reference	Comments
7. (Optional) Install the System V Extension software.	Section 5, "Installing Extension Tape Products"	The Extension software is optional. You may install this software any time the system is in single-user mode.
8. (Optional) Install the Crypt Utilities software.	Appendix A, "Crypt Utilities (Optional)"	The Crypt Utilities software is optional. You may install this software any time the system is in single-user mode. Appendix A also contains instructions for removing Crypt Utilities software should you ever want to do so.
9. Install other software products.	Refer to the documentation that accompanies these software products for specific installation procedures.	You may install other software products such as RFS, RM/COBOL, and NET-5000 any time the system is in single-user mode.
10. (Optional) Take the system to multiuser mode.	Section 8, "Bringing the System to Multiuser Mode" and "Bringing the System to Multiuser Mode Using Menus"	Installing software is done in single-user mode. After installation is complete and you have backed up your release tapes, the system may be taken to multiuser mode and be made available to all users.

Planning Hard Disk Formatting and Partitions

Installation of the System V Base software as a first-time installation requires you to format and partition your disk. Formatting erases everything on the disk and prepares the disk for partitioning.

If you are installing System V Base software as an upgrade you can reformat your disk or you can keep the current format and partitions.

In either case, you must archive all of your non-operating system files in the **root** file system (i.e., files in **/usr/acct**).

There is a default partition used during installation if you do not specify one. The default partition set up for the 170-megabyte disk drive (M1375), the 380-megabyte disk drive (M1578), and the 140-megabyte disk drive (XT1140) consists of 15 partitions on any disk. Partition 1 is always **root** on the **root** disk. Partition 15 is always swap on the **root** disk. The sizes of the partitions vary from one disk to another (refer to Table 1-5).

Caution

Partition 13 and 14 should not be used on the **root** disk.

Table 1-5. Default Partition Sizes

Partition	M1375/170 MB Hard Disk	M1578/380 MB Hard Disk	XT1140/140 MB Hard Disk
1	128 MB	296 MB	116 MB
15	10 MB	10 MB	10 MB
Total	138 MB	306 MB	126 MB

These defaults can be overridden by selecting the option to change the partition table during the installation. When specifying a non-standard partition table, always be sure to make the **root** partition at least 45 megabytes. When selecting the size of the swap partition, a good rule of thumb is to use 4 megabytes of swap space for each megabyte of physical memory, with a minimum of 10 megabytes. Use the **show**(1M) command to check how much

memory is installed. Refer to the Administrator's Reference Manual for more information on the **show**(1M) command. You can never have more than 16 partitions.

In most cases, you do not want to mount **/usr** on partition 1, the **root** partition, because **/usr** is likely to grow in size if you have many users.

You cannot select partition 15, the swap partition, on which to mount **/usr**.

Before you proceed, answer the following questions and refer back to them, if needed, during the installation procedure.

1. Do you want to perform a full format (or reformat) and media check on your hard disk?

   Answer (yes or no):*

2. Do you want to use the default partitioning for your hard disk?

   Answer (yes or no):

   If you answered **yes**, record the default partition information from Table 1-5 in Table 1-6. If you answered **no**, proceed to Question 3.

3. Decide how many partitions you want to set up on your hard disk and how large each partition should be. Record this information in Table 1-6.

---

*If you answer **yes** and this is an upgrade installation you must archive all user data on the hard disk before performing the installation procedures. If you answer **no** to this question, Questions 2 and 3 are not applicable.

Table 1-6. Partition Matrix

Partition Number/Name	___MB Hard Disk
1/ root	MB
15/swap	MB

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Operating Tape and Disk Drives

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Storing Cartridge Tapes 2-3
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Flexible Disk Administration 2-7
Handling, Labeling, and Storing Floppy Disks 2-8
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Section 2
Operating Tape and Disk Drives

Introduction

This section provides information on handling, labeling, and storing tapes and diskettes. It also provides procedures for inserting a cartridge tape (such as the Base and Extension tapes) and a flexible diskette in system disk drives.

Cartridge Tape Administration

The cartridge tape of the U 5000 system uses an 18-track, normal density, 600-foot tape (DC600XTD) to obtain 60 megabytes of storage. It also supports a 15-track, normal density, 600-foot tape (DC600A) for 60 megabytes of storage. The cartridge requires a recording tape that is certified for 10,000 bits per inch (bpi).

Write Protect

The cartridge tape has a write-protect hole in the right back edge. When the hole is open, the system can read the tape, but it cannot write to the tape. When the hole is closed, the system can read and write to the tape. To open the write protect hole, turn the arrow on the safe indicator in the direction of the embossed SAFE on the cartridge tape. To close the hole, turn the arrow in the opposite direction (refer to Figure 2-1).

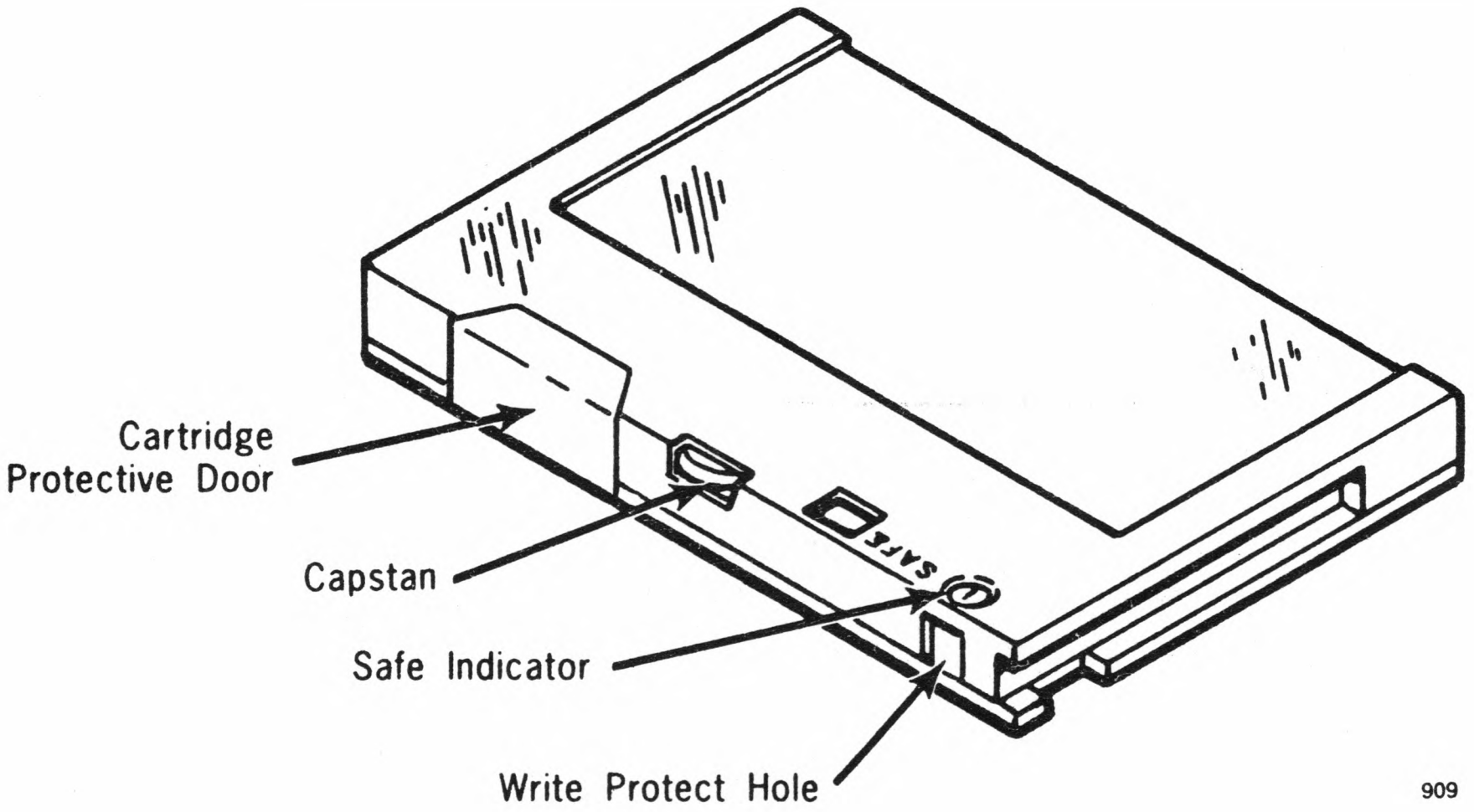

Figure 2-1. Cartridge Tape

The drive capstan is in the center of the back edge. The drive uses this capstan to move the tape. The tape should not be moved while handling the cartridge. Tape movement can occur if you move the capstan while the cartridge is out of the drive.

The drive accesses the tape through a cartridge protective door in the left, back edge of the cartridge tape. Do not open this door. The drive opens the door while the cartridge is being installed.

Labeling Cartridge Tapes

Each carton of cartridge tapes includes self-adhering labels for each cartridge. One label should be applied on the cartridge container and one on the cartridge itself. The label should name the file

system or the files on the tape. Write with a felt-tipped pen before applying the label to the cartridge or container. Deposits from lead pencils, erasers, grease pencils, or ballpoint pens can damage the recording tape surface.

Storing Cartridge Tapes

Put the cartridge in its container so the bottom edge of the cartridge is down. The label on the container should be visible. This makes it easy to select the correct cartridge. A cartridge tape must be stored with the back edge down. Storing the cartridge with the aluminum bottom in a horizontal position can cause the tape to become unevenly wound on the reels.

Cartridge tapes must be permitted to reach the same temperature and humidity as that of the drive before they are used. To ensure this, place cartridges near the drive one hour before use.

Do not put tape cartridges near magnetic fields, such as those produced by motors, transformers, magnets, or magnetized tools.

How to Insert a Cartridge Tape

Use the following procedure to insert a quarter-inch cartridge (QIC) in the main system drive.

Note: *When handling a cartridge tape, do not touch the magnetic recording tape and do not drop the cartridge. Also, for smoother tape operation, keep the cartridge clean.*

1. Remove the cartridge tape from its container and close the container.

2. Before inserting a cartridge tape into the tape drive, verify that the write-protect indicator is positioned correctly. To protect the contents of the tape from modification, turn the indicator so that it points to the word SAFE. If you intend to write on the tape, turn the indicator so that it points away from the word SAFE.

3. Open the upper front panel access door.

4. With the top side (label side) up, slide the cartridge into the drive until it stops. The drive is designed so the cartridge can be loaded in only one direction (refer to Figures 2-2 and 2-3 for the appropriate system).

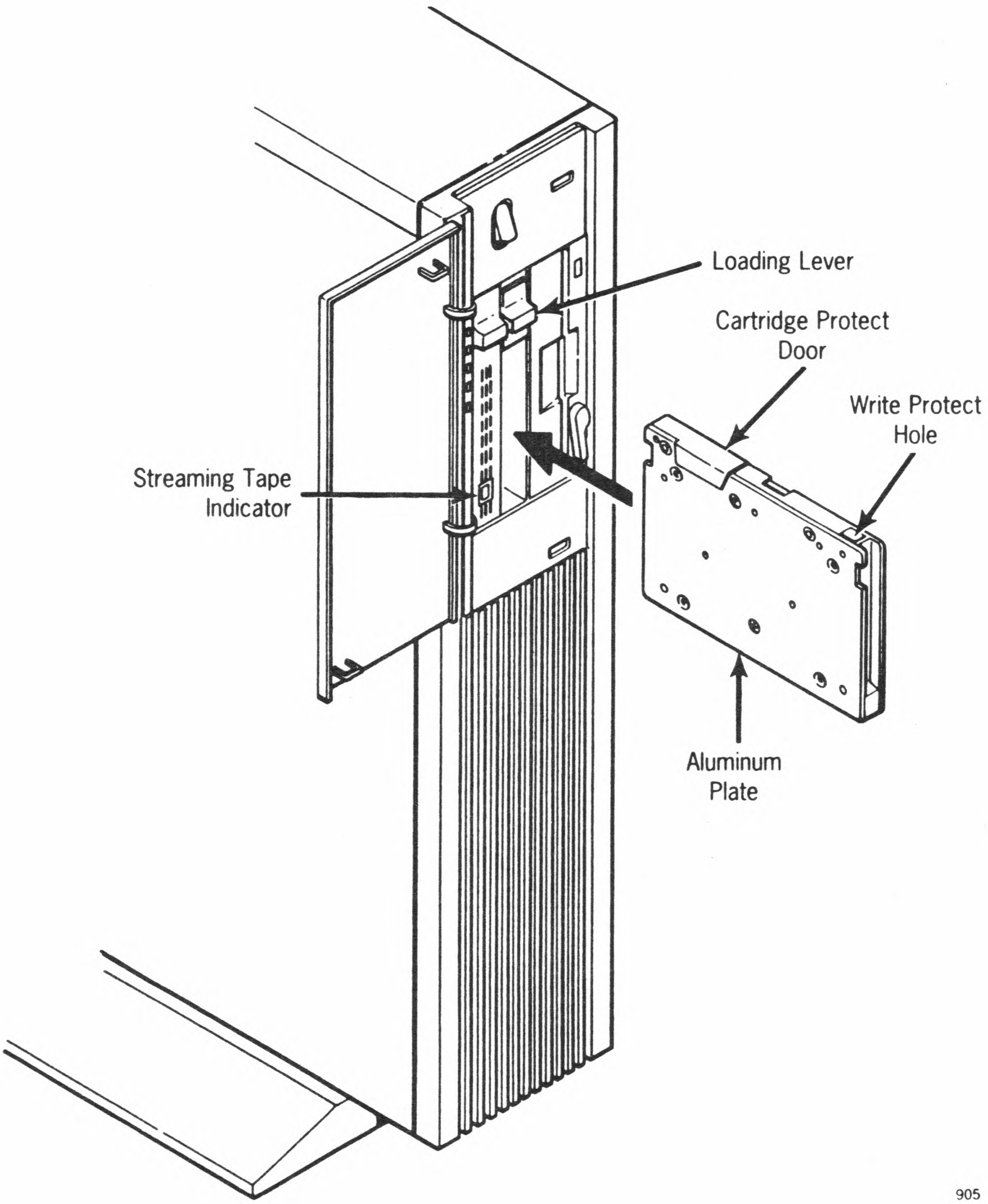

Figure 2-2. Inserting a Cartridge Tape in a U 5000/30/35

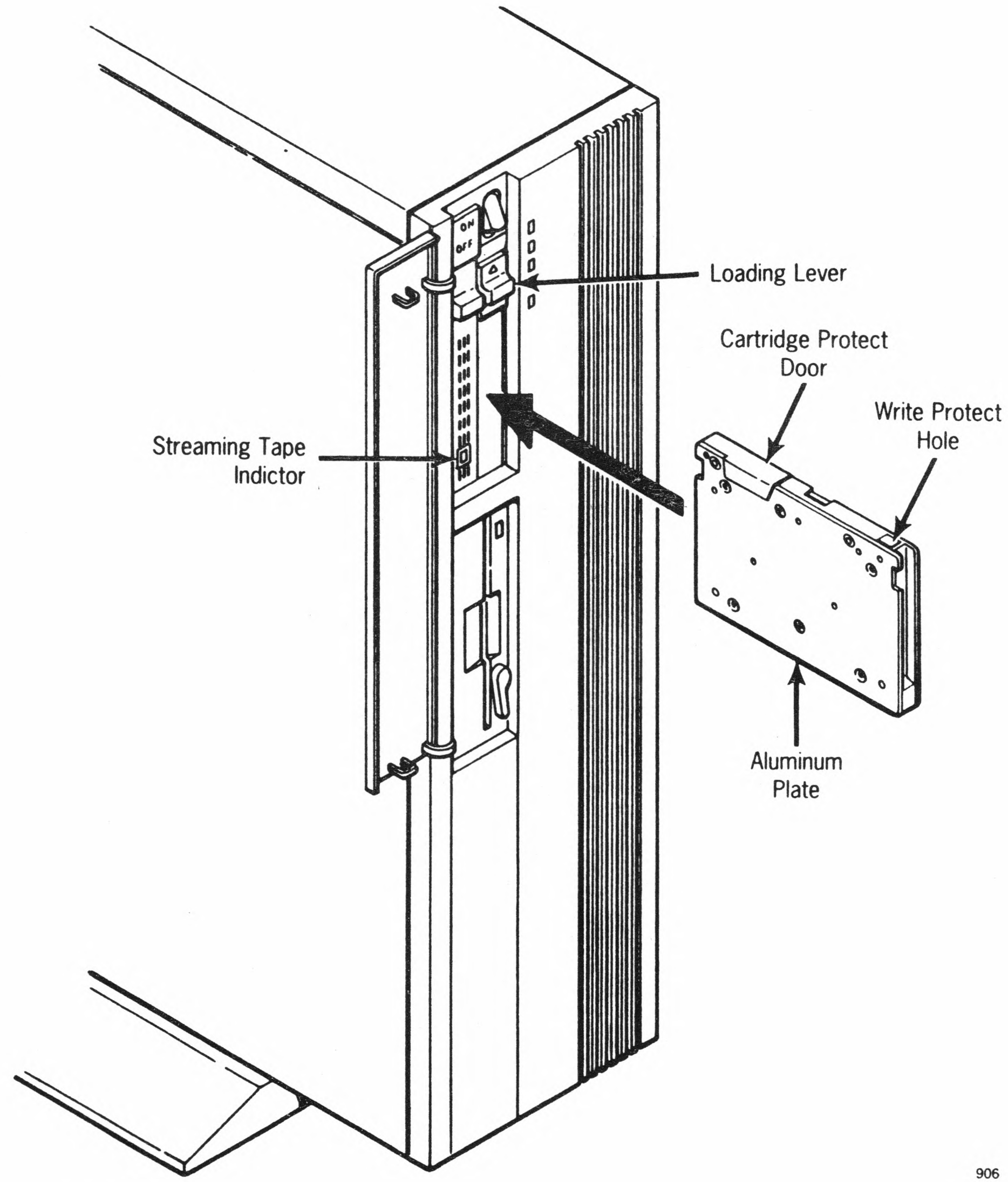

Figure 2-3. Inserting a Cartridge Tape in a U 5000/50/55

5. Load the cartridge tape by pushing it through the loading aperture until it stops. As the cartridge is inserted, it may encounter slight resistance from the ejector assembly. This resistance cushions the loading action. Just before reaching the stop point, the cartridge protective door opens to expose the tape. The stop point is reached when the cartridge drops behind the lip of the front bezel aperture.

6. Move the loading lever toward the cartridge. This action secures the cartridge and moves the head assembly into operating position.

   Once you lock the cartridge in the drive, it should not be removed until the program has stopped. This ensures the tape is in the correct position for future use.

Note: *A cartridge tape should not be kept in the drive unless it is being used by the program. If the cartridge remains idle in the drive for an extended period of time, heat may cause the tape to lose its tension.*

How to Remove a Cartridge Tape

To remove a cartridge tape, push the loading lever away from the cartridge. The cartridge automatically slides out. Place the cartridge in its container.

Floppy Disk Administration

The U 5000 system floppy disk drive uses a 5.25-inch, low density (LD) disk. The LD disk has a formatted capacity of 1.2 megabytes at 96 tracks per inch.

Handling, Labeling, and Storing Floppy Disks

All disks should be handled with care. You can preserve the life and increase the reliability of your disks by following these rules:

- When handling a disk do not touch the shiny exposed surface of the recording media.
- Do not bend the disk.
- Only use felt-tipped pens for writing on the disk label; ball point pens may damage the media. Write on labels before applying them to the disk.
- Keep disks away from magnetic fields.
- Store disks in envelopes in a temperature range between 50 and 125 degrees Fahrenheit.
- Do not touch or scratch any exposed portion of the shiny surface, or allow dust or moisture to collect on the disk.
- Do not remove the disk from the drive when the floppy disk indicator light is on.
- Floppy disks generally have write-protect notches. (Those without notches are permanently write-protected.) The write-protect notch is on the upper right side of the floppy disk. Cover this notch with a foil write-protect tab (supplied with the disks) to ensure that data is not written to, or inadvertently deleted.

How to Insert a Floppy Disk

The disk drive is located near the top of the U 5000/30/35 system unit, and near the middle of the U 5000/50/55 system unit. Refer to Figures 2-4 and 2-5 for the appropriate system.

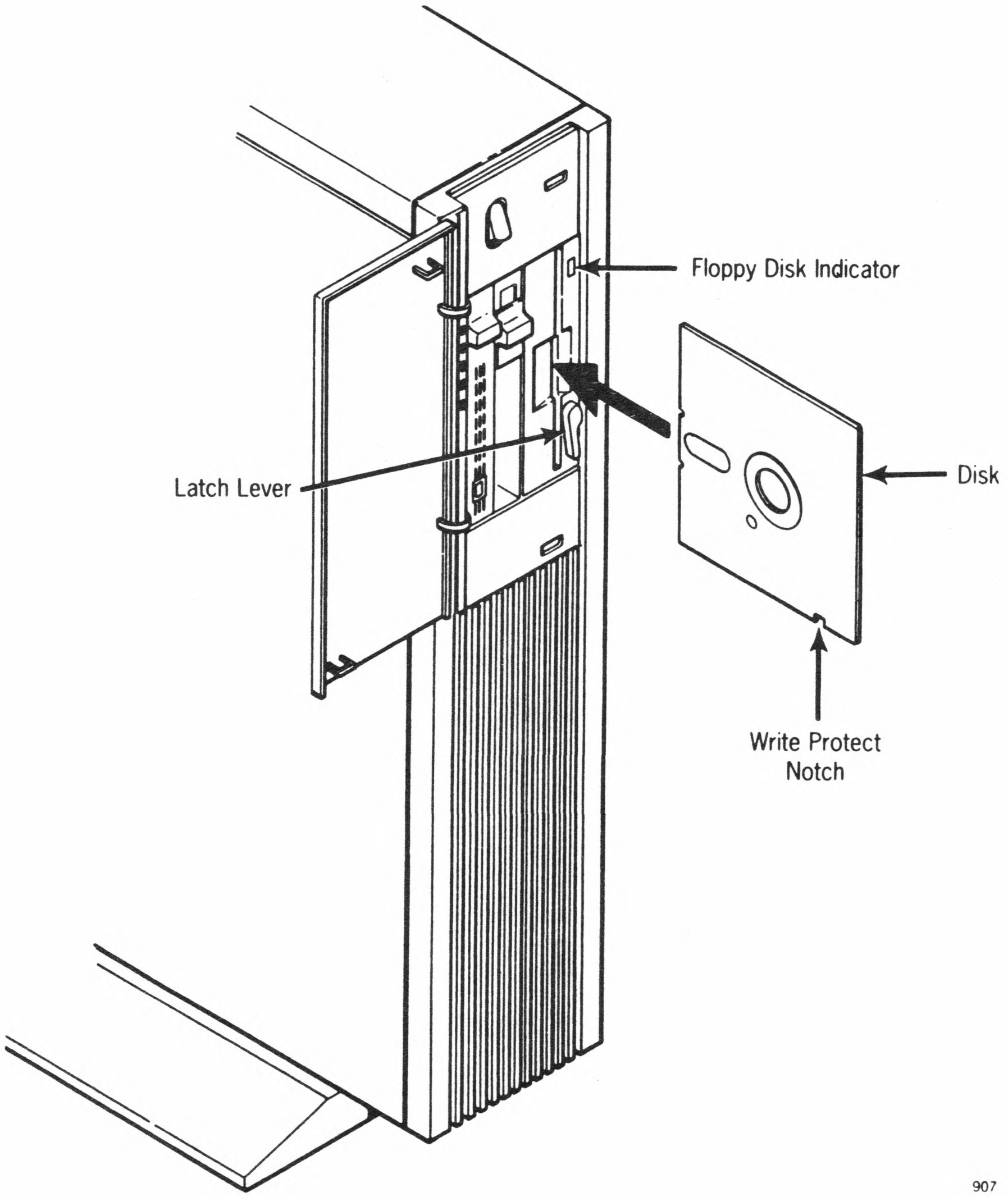

Figure 2-4. Inserting a Disk in a U 5000/30/35

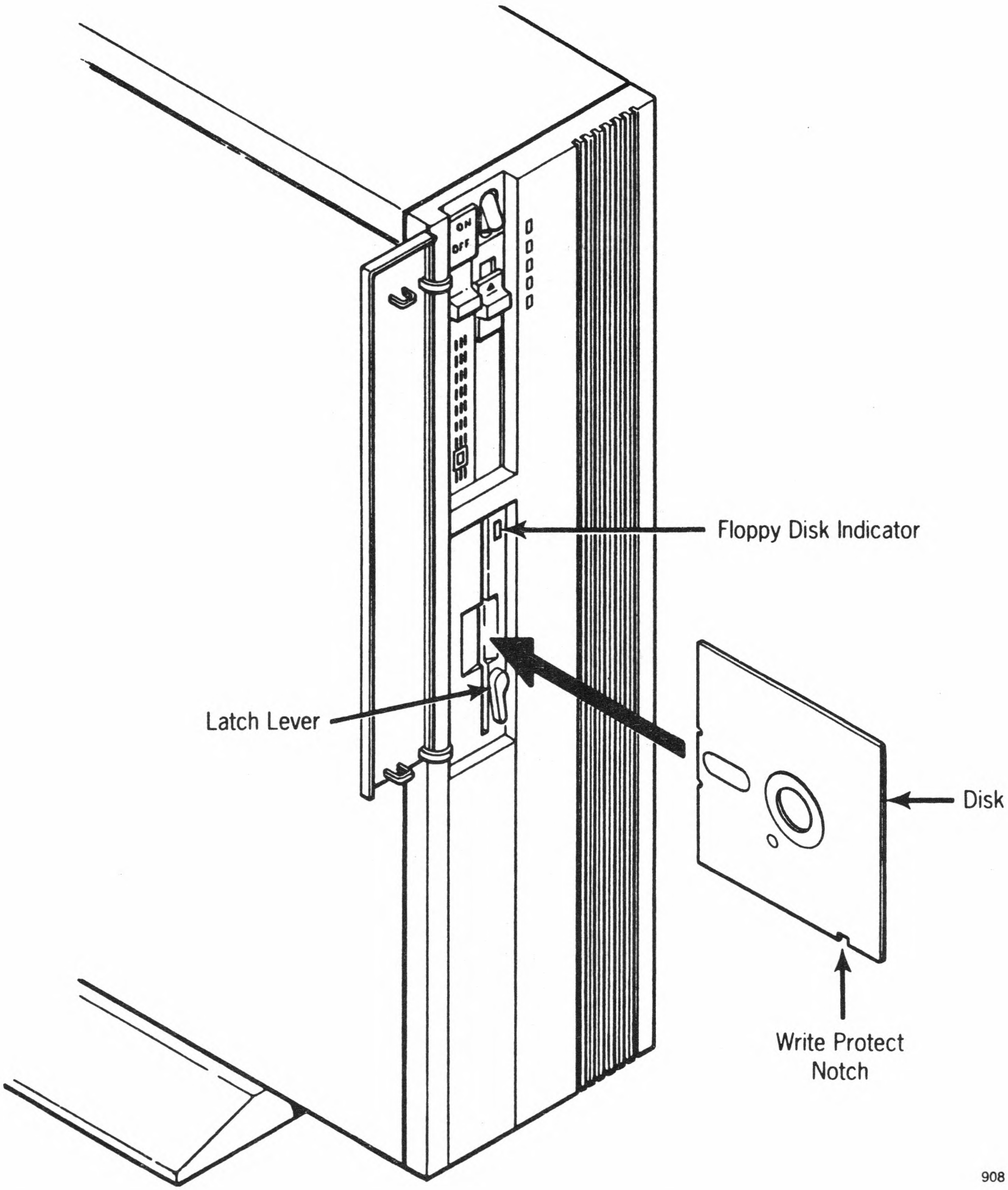

Figure 2-5. Inserting a Disk in a U 5000/50/55

Use the following procedure to insert a disk.

1. Make sure the disk is write-protected if you want the system to read, but not write to it. Make sure the disk is not write-protected if you want the system to write to the disk. Refer to the "Handling, Labeling, and Storing Floppy Disks" subsection for further details on write-protection.

2. Ensure the latch lever is in a vertical position. Refer to Figures 2-4 and 2-5 for the appropriate system, for assistance on latch lever placement.

3. Hold the disk by the top edge and remove it from the envelope.

4. With the write-protect notch down insert the disk gently into the drive.

5. Turn the latch lever clockwise to close the drive door.

How to Remove a Floppy Disk

1. To release the disk from the drive, wait until the floppy disk indicator light is off and turn the latch counterclockwise.

2. Remove the disk and replace it in the storage envelope.

Section 3
Initializing the System

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Turning On the Power 3-2

Section 3
Initializing the System

Introduction

This section is your guide to starting up the system. Starting up the system means loading a copy of the operating system from hard disk into memory and executing it (beginning with turning on the computer).

First-Time Power Up

Power up of the system starts when you turn on system power with the intent of taking the system from a rest state to one of its operating states, such as power-up monitor, single-user run level, or multiuser run level. For a complete list of operating states, see the "Preparing for Installation" section and the "Installing System Software" section.

First-time power up includes power on procedures not always necessary on subsequent power ups. Once you have the system up and running for the first time, it is feasible that each time you power down (take the system down to a halt) you may not completely power off (disconnect the power source). The following instructions are for a first-time power up (including power on) of the system.

Powering Up the System

The U 5000 system power-up routine is performed by the boot ROM. This subsection describes how to power on the U 5000 system and what to expect when performing this operation.

Turning On the Power

Manual Power On

To turn on the power:

1. Turn on the terminal that is connected to Port B (control console). If a terminal is connected to Port A, make sure that it is turned off.

2. Turn on any external SCSI devices.

3. Remove the top cover of the main unit by lifting it up.

4. Move the MANUAL/AUTO LOAD toggle switch to the MANUAL position. Refer to Figure 3-1.

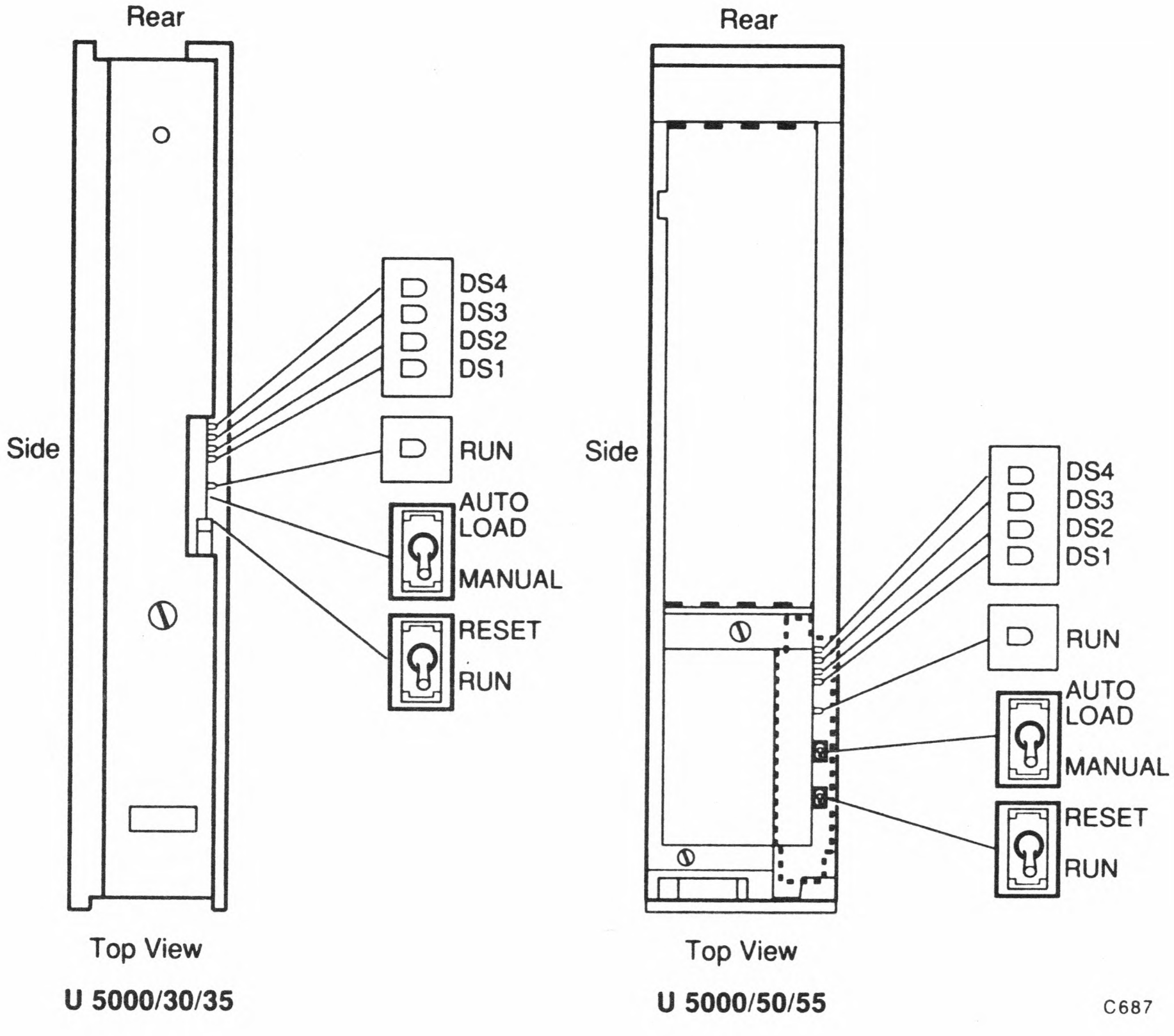

Figure 3-1. Main Unit Indicators

5. Open the upper front panel access door for the U 5000 system.

6. Turn the power switch to the On position. Refer to Figures 3-2 and 3-3 for the appropriate system.

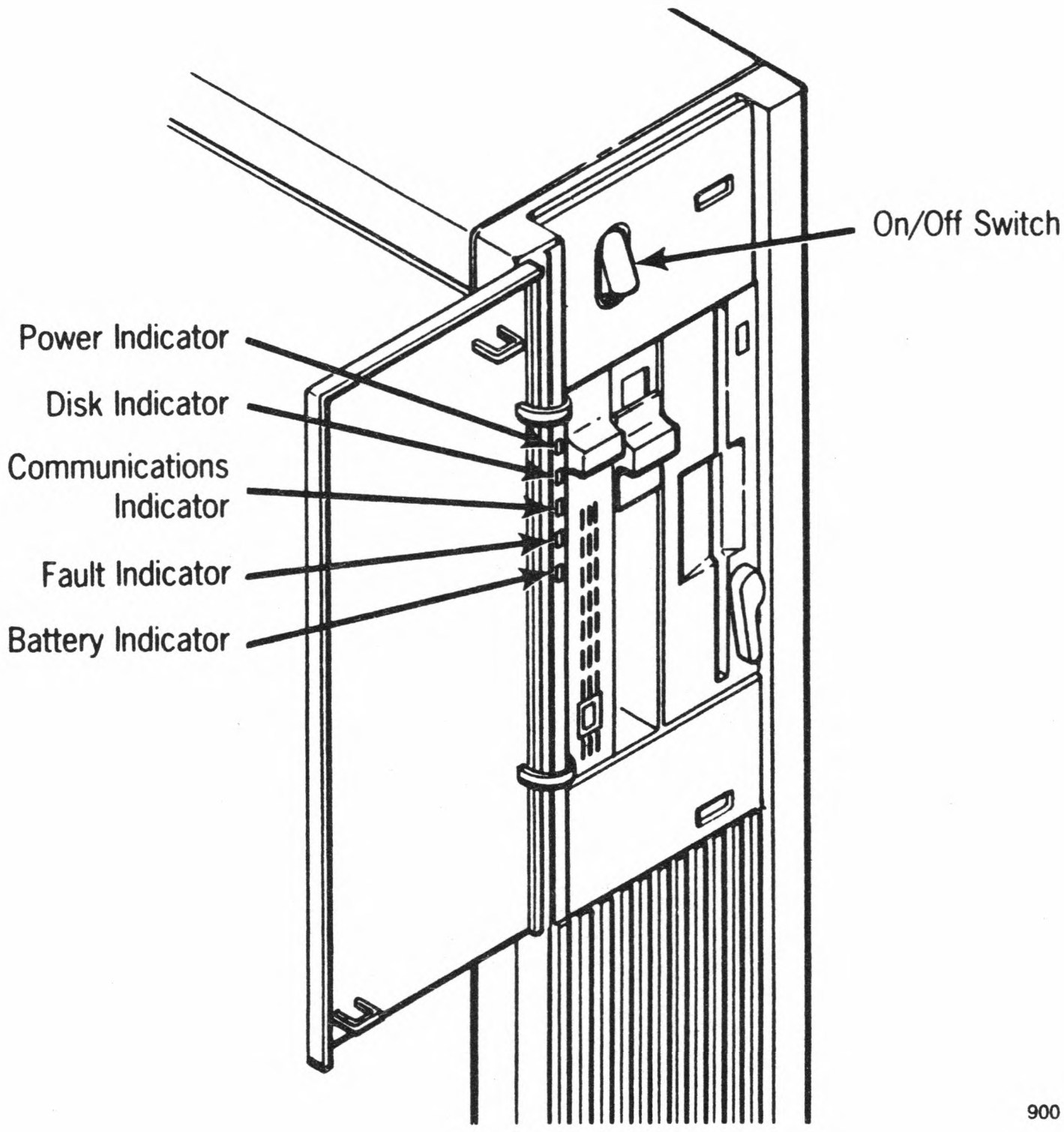

Figure 3-2. U 5000/30/35 System Power Switch and Indicator Panel

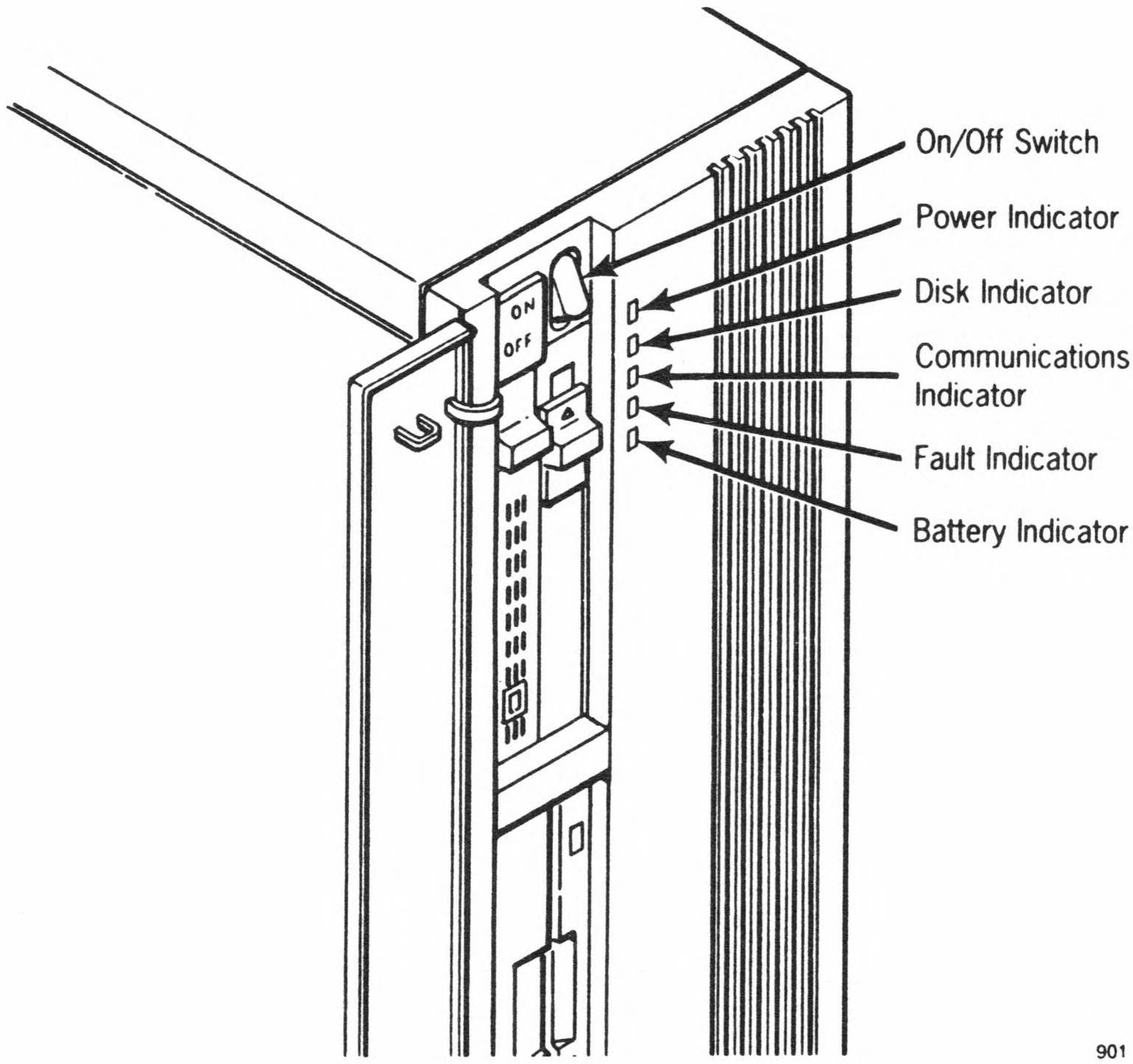

Figure 3-3. U 5000/50/55 System Power Switch and Indicator Panel

7. Verify the ventilation fan is operating. For illustrations of the indicator panels refer to Figures 3-2 and 3-3 for the appropriate system.

   While the system is powering on:

   - The green power light should be on.

   - If a fatal error is encountered before a sign-on message can be displayed the Fault light comes on. Refer to Figures 3-2 and 3-3 for the appropriate system. Turn the system off and repeat Steps 6 and 7. If the Fault light condition persists, call your Unisys Service Representative.

When the power switch is turned on, the terminal connected to Channel B displays the **SELECT STARTUP FUNCTION** menu as follows:

```
SELECT STARTUP FUNCTION

    1.   QUERY

    2.   INSTALL SYSTEM

    3.   LOAD

    4.   SWITCH INPUT

    5.   TEST

    6.   SUSBUG

ENTER ITEM NUMBER
```

If any message other than the **SELECT STARTUP FUNCTION** menu is displayed, refer to the "Start-Up Diagnostics" section in the Diagnostics Reference Manual. When the **SELECT STARTUP FUNCTION** menu is displayed, continue the **INSTALL SYSTEM** installation following the procedures in the "Installing System Software" section, or continue the **LOAD** manual boot following the procedures in the "Manually Booting the Operating System" subsection in the "Booting Up" section. If any error message is displayed during the system software installation procedure, refer to the Error Message Manual.

Auto Load Power On

To turn on the power:

1. Turn on the terminal that is connected to Port B (control console). If a terminal is connected to Port A, make sure that it is turned off.

2. Turn on any external SCSI devices.

3. Remove the top cover of the main unit by lifting it up.

4. Move the MANUAL/AUTO LOAD toggle switch to the AUTO LOAD position. Refer to Figure 3-1.

5. Open the upper front panel access door for the U 5000 system.

6. Turn the power switch to the On position. Refer to Figures 3-2 and 3-3 for the appropriate system. When the power is turned on, the U 5000 system begins its loading routine. This routine includes a power-on self-test (POST) routine when the system is in auto load mode. This loading takes approximately 2-3 minutes.

7. Verify the ventilation fan is operating. For illustrations of the indicator panels refer to Figures 3-2 and 3-3 for the appropriate system.

While the system is powering on:

- The green power light should be on.

- If a fatal error is encountered before a sign-on message can be displayed the Fault light comes on. Refer to Figures 3-2 and 3-3 for the appropriate system. Turn the system off and repeat Steps 6 and 7. If the Fault light condition persists, call your Unisys Service Representative.

8. After the POST routine several processes begin. Various informational messages scroll across the screen as the operating system is loading and booting up. If the system is in auto boot, no operator intervention is required. Refer to the "Automatically Booting the Operating System" subsection in the "Booting Up" section.

Section 4
Archiving and Restoring Files

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Section 4
Archiving and Restoring Files

Introduction

Archiving (or backing up) files, file systems, and tapes is performed in connection with:

- System maintenance
- Installation of a software upgrade
- Protection of tape contents

This section provides strategies for archiving and restoring files. It also provides procedures for archiving and restoring system and user files and backing up tapes.

Backing Up the System

Computers create, store, and disseminate data. Backups preserve this data. All directories and file systems can be restored if your system is properly backed up.

A system crash can corrupt the file system making user files inaccessible or incomplete. Backups are necessary to restore a corrupted file system to its original state. Backups are also important in recovering from less major system problems and operator errors.

Strategies

The best strategy for data preservation is to perform a partial backup daily. If data is lost for any reason, only the work done that day would be permanently lost. A daily backup allows restoration of individual files that have been corrupted or lost. Regularly planned backups can restore the system to the point of the last backup.

Files for daily backup should include:

/etc
/usr (especially **/usr/acct** and **/usr/bin**)
/work

WARNING

It is recommended that a backup or restore of any file system be performed while in single-user mode. Under certain conditions (e.g., mounted file system, processes using file system), performing a backup/restore could result in a corrupted file system and loss of data.

Daily backups alone are not enough. Additional backups on a weekly and monthly basis are strongly advised.

Every week (except on days when monthly backups are done), perform a complete backup of each file system. These periodic backups ensure that a recent version of each file is copied. Retain these periodic backups until the next monthly backup. This periodic backup allows you to restore the system after any system crash.

Once a month, back up every file system. Retain these copies in a secure archive away from your site. This allows you to restore the

system after a crash and acts as a system history if you choose to archive these tapes.

As a protection against the unlikely event of the **root** file system being destroyed, make a copy of the **root** file system using the **dd** command. Refer to the "Saving the root File System on Tape" subsection in this section. Retain this copy as a backup. This is important if you have modified your **root** file system.

If your circumstances require an extremely reliable method of restoring lost files, consider implementing a dual copy and archive procedure.

Note: *Whatever strategy you choose, be consistent and systematic in executing it.*

The system administrator should schedule a backup when few users are on the system. To avoid confusion, schedule backups at the same time on the same day of every week.

A regular schedule of backups requires a large number of tapes, along with adequate storage. Backup tapes should be properly labeled with the date of the backup and the names of the files and directories contained in the backup.

Full and Partial Backups

Each time you back up, you have the option of performing a full or partial backup:

- A full backup archives everything on the system including the kernel.

- A partial backup archives anything less than a full system backup. For instance:

— Qualified system backups archive all file systems other than **root**, along with some files and directories that require frequent modification, such as **/etc/passwd**, **/etc/motd**, and **/etc/group**.

— Incremental backups archive specific files based on the last time the files were modified, written, or read.

— Walking backups archive different parts of a file system on different nights.

A full backup is preferred each time you back up, as it reduces the risk of data loss. When time restraints dictate incremental backups, full backups should be done at least monthly.

Automated Backup Procedure

Normally the backup procedure is automated by the system administrator. Daily filesaves are a housekeeping function, running under the operating system, and are made on disks. A weekly filesave, however, should be made on tapes. Tape saves are necessary for long-term storage or if you do not have sufficient disk storage. Your system administrator may have created shell scripts to automate disk and tape save procedures.

The System V operating system contains a menu system which performs backups automatically. Refer to the Menu System Operations Guide for more information.

Disk Backups

An alternative to tape backups is to dump data to a **/backup** directory file on a disk. If you are connected to an Ethernet network, a backup disk partition can be divided into directories to accommodate several systems at once. For more information on partitioning disks,

refer to the "Planning Hard Disk Formatting and Partitions" subsection in the "Preparing for Installation" section. For procedures on moving information from one system to another using Ethernet, refer to the NET-5000 and NET-6000 Operations and Administration Reference Manual.

Restore Planning

It may seem premature to mention restore commands before introducing backup commands, but the time spent deciding which files (special files, directories, entire file systems) are most likely to be recovered, is time saved later when recovering those files. Too often backup schemes are implemented without thought to methods of recovery. For example, what if someone on the system corrupts a directory and needs the backup copy? The **tar x** command recovers the entire contents of a tape. Problem solved, right? Find the most recent backup tape and **tar x** it back onto the system. Wrong! The **tar x** command overwrites all current files, wiping out all data put into the system since the last backup. This is not what you want. What you want is a recovery of specific data, without overwriting current data.

Note: *Again, this cannot be stressed strongly enough; stop and consider what you might want to restore before you back up.*

Backup and Restore Commands

There are numerous backup and archive commands you can employ to do backups, including: **tar**, **cpio**, and **volcopy**. Each command has a slightly different function.

To archive or back up files, use **tar** or **cpio**. The **tar** command copies single files and entire directories; the **cpio** command, used in conjunction with the **find** command, copies files one at a time. To archive or back up entire file systems other than **root** use **volcopy**.

The following is a summary of information on the backup and restore commands.

For more information on these commands refer to the Administrator's Reference Manual for **volcopy** and the User's Reference Manual for **tar** and **cpio**.

tar

- Copies single files or entire file systems to tape, allowing for full or partial restore
- Transfers files and directories (including subdirectories and files) from one file system to another
- Provides a table of contents (TOC)
- Has checksum capability which compares and ensures the sending output is the same as the receiving input (uses **sum** command)

There are a number of options you can use with **tar**:

b uses the next argument as the blocking factor, (i.e., b20).

c creates a new backup tape, starting the copy process from the beginning of the tape and overwriting any information contained on the tape.

f specifies that the next argument be used as the archive device. The **tar** command assumes backup from a QIC tape; use the **-f** option to specify other.

r writes files to the tape after the last existing file. This option applies to 9-track tapes only.

t lists a TOC of all files on the backup tape, or the pathnames of the named files.

u adds any new or changed name files to tape.

v writes everything to standard output as it is copied. Typically used with the **-c** or **-x** option.

w displays the action taken per file and waits for confirmation. Reply **y** means to take action; anything else means to take no action.

x extracts the named files (pathnames contained on the command line) from the backup tape. If directories are named, it recursively extracts the contents of the directories, including all subdirectories.

To give an example:

#tar -cv *usr* < cr >

instructs **tar** to create a backup tape with the **-c** option; the **-v** option instructs **tar** to print the name of each file as it is copied. The **tar** default is the QIC tape device (**/dev/rmt/c0d0v** or **/dev/rtp**).

Use the -f option to specify a device other than the QIC tape. The previous example is modified as follows:

tar -cvf /dev/rmt/c1d0m *usr*

to specify the 9-track tape drive.

Note: *Where you start your **tar** copy is critical. If you start from **root** (the base of the tree structure), the archive also starts at **root**. Change directory to the directory you want to start in.*

Caution

Any files archived with partial pathnames, unless assigned in the command line to a directory, are restored to the current working directory. If you know the directory in which you want the file to be assigned, do a **cd** to that directory and then enter:

tar xv *partial_pathname* **< cr >**

For example:

#cd /usr/system/hunter < cr >
#tar -cv *production* **< cr >**

means your production file archive is stored as ***/production***. This allows data to move from system to system or tree to tree without creating extra directories.

The **tar** command stores and restores files as file trees, descending and ascending to and from **root**, taking files from and putting files back in order.

Empty directories are not copied. Create a dummy file if you want an empty directory copied.

Restoring with tar

> **Caution**
>
> When doing a restore, a tape version of a file overwrites a disk version if it finds one with the same name on the system.

Note: *All **tar** backups require **tar** restores.*

When restored, these files retain their original ownership and group membership.

Use the **-x** option to restore files:

#tar -x < cr >

This restores every file as it was. However, this may not be what you want as it overwrites all files created since the last **tar** backup.

#tar -xv */usr* < cr >

This restores the ***/usr*** directory and all subdirectories and files below ***/usr***.

Individual files are restored by specifying the pathnames under which they were archived:

#tar -xv */usr/system/hunter/production* < cr >

This restores ***./production*** from tape, reading to standard output as it restores.

cpio

The **cpio** command copies files to tape on an individual basis, using the **find** or **ls** command to locate the files. The standard output of **ls** is piped to the standard input of **cpio** for archiving. For example:

#ls | cpio -o > /dev/rtp < cr >

or

#find *file system* -print | cpio -*options* > *device* < cr >

Note: *All **cpio** backups require **cpio** restores.*

The advantages of using **cpio** are that it:

- Copies files to tape on an individual basis
- Reads from standard input and copies to standard output
- Provides a table of contents (TOC)
- Does a full or partial restore
- Can copy special files (superuser function)

volcopy

The **volcopy** command is used to archive and restore entire file systems from disk to tape or diskette. The following is an example of archiving a file system other than **root** to QIC tapes:

volcopy -a *filesystem /dev/rdsk/partition d0 /dev/rtp epoch1*

In the example, ***filesystem*** is the file system name, **/dev/rdsk/partition** is the disk mount device, **d0** is the disk volume name, **/dev/rtp** is the tape device name, and **epoch1** is the tape volume name. The **-a** option gives the user a verification prompt before the command is executed. In archiving to tape, the user is also prompted to supply the density of the tape (in bpi) and the length of the tape (in feet).

The advantages of using **volcopy** are that it:

- Copies entire file systems in one operation
- Copies special files (superuser function), if needed
- Copies large amounts of data (the system prompts the user when multiple tapes or diskettes are needed)

Saving Non-root File System on Tape

In this example, the user (**/usr**) file system, located in logical files in the directory / (**root**) is saved on cartridge tapes. The file is recorded in **cpio** format and the entire current directory is saved.

To save a file system, the system must be in single-user mode.

Note: *Take extreme care to execute the command sequence exactly, including each space indicated.*

Enter:

mount /directory_name < cr >
sync < cr >
cd /usr < cr >
find . -print | cpio -ovB > *dev/rtp* < cr >

Saving the root File System on Tape

In the following example, the **root** file system is saved using the **cpio** command.

The system must be in single-user mode. All other file systems must be unmounted. Use the command sequence:

cd / < cr >
find . -print | cpio -ovB > *dev/rtp* < cr >

Restoring the System and Files

In the event of a system problem or operator error when files are lost or corrupted, files are restored from the backup media. However, the system administrator must determine to what degree the system is corrupted before proceeding with a restore procedure.

There are two basic restore types, a file restoration and a system restoration. File restoration is on the file, directory, or **root** directory level. System restoration entails reinstalling the entire file system or repairing the **root** file system by booting from the Base tape, running **fsck** on the **root** file system, and then reinstalling all of the other file systems from tape. The restore procedure used depends on whether a file restoration or a system restoration is needed.

Performing File Restores

Files and directories may be restored unconditionally or conditionally. When a file is being restored unconditionally and it currently exists on the system, it is overwritten with the file from the restore media. If a file exists on the system and the file is not on the restore media, no action is taken.

Unconditional restores are used for single-file restoration and restoring on the directory level. Restored files assume the status they had at the time they were archived.

When a file is being restored conditionally and it does not exist on the system, it is copied from the restore media to the system. When a file is on the system and on the restore media, the most recent modification date is checked on each file. The file with the latest modification date is accepted in the system. If a file exists on the system and is not on the restore media, no action is taken.
For multiple-file restoration, start with the most recent backup.

Note: *Partial backups must be examined chronologically, starting with the oldest, to ensure proper restoration.*

Single-file restorations are done from the most recent backup of the file. Filenames display as they are copied from tape to disk.

The following procedure is an example of a file system restore using **cpio**:

cpio ***-options filename*** **< /dev/rtp < cr >**

where ***-options*** equals **-ic7mu** for an unconditional restore or **-icdm** for a conditional restore, and ***filename*** equals one of three values: the full pathname of a file, the full pathname a directory restore with a suffix of /* (e.g., **/usr/acct/***), or the full pathname of files and/or directories for a multiple-file and/or directory restore. Note that directory pathnames are suffixed with /* (e.g., **/usr/acct/***) and the ***filename*** is optional. The name-generating notation of **sh**(1) is used if the names appear within double quotes. Refer to the User's Reference Manual for further information on the **sh**(1) command.

Note that file restores are also done using **tar**. Refer to the "Backup and Restore Commands" subsection in this section for more information and examples.

If the operating system is not operational, reinstall or repair it as described in the "Backing Up Release Tapes" subsection.

Restoring root File System with Installation Tape

The operating system is not operational when there is a lack of system response at the terminal, when the disk activity indicator shows no disk activity at a time when known disk functions are expected, or both.

Attempt to repair the **root** file system by booting from tape and repairing the corrupted **root** file system using the **fsck** command. Refer to the Administrator's Reference Manual for more information on the **fsck** command. You may need to do this several times to complete the **root** file system repair. The **root** file system may be unrepairable if several **fsck** sequences do not repair it.

You must reset the system and be at single-user mode to restore the system. Reset the system manually, reinstall the **root** file system, and perform a total system restoration using the most recent system backup media. File restoration is done if any partial backups were performed after a total system backup. Each restoration is done according to the chronological order of the backup. This restores the system as close as possible to the status it had at the time of the system failure.

Backing Up Release Tapes

The following is used to back up release tapes:

1. Log in as **root** and press **< cr >**. Your screen displays the message-of-the-day.

2. Make sure the tape to be backed up is write-protected. Refer to the "Write Protect" subsection in the "Operating Tape and Disk Drives" section. Insert the tape into the tape drive.

Note: *Ensure that the blank tape storage capacity is as large as the master tape.*

3. Enter **/menus/scripts/tapeback.sh < cr >**.

Notes: *Your screen displays various messages; respond appropriately to any prompts.*

The name of the operating system is Unisys System V.3 (16 or 16+ Users) and not ***Install Operating System UNIX*** *as the screen indicates.*

4. Remove your tape from the tape drive. Obtain a blank tape and make sure it is not write-protected. Insert the blank tape into the tape drive.

5. Respond to any prompts presented to you. When the backup process is complete, the system rewinds the tape.

6. When the tape is finished rewinding, remove it from the drive, make sure it is write-protected, and label it.

7. Be sure to store your master and backup tapes in a safe place.

Backing Up File Systems

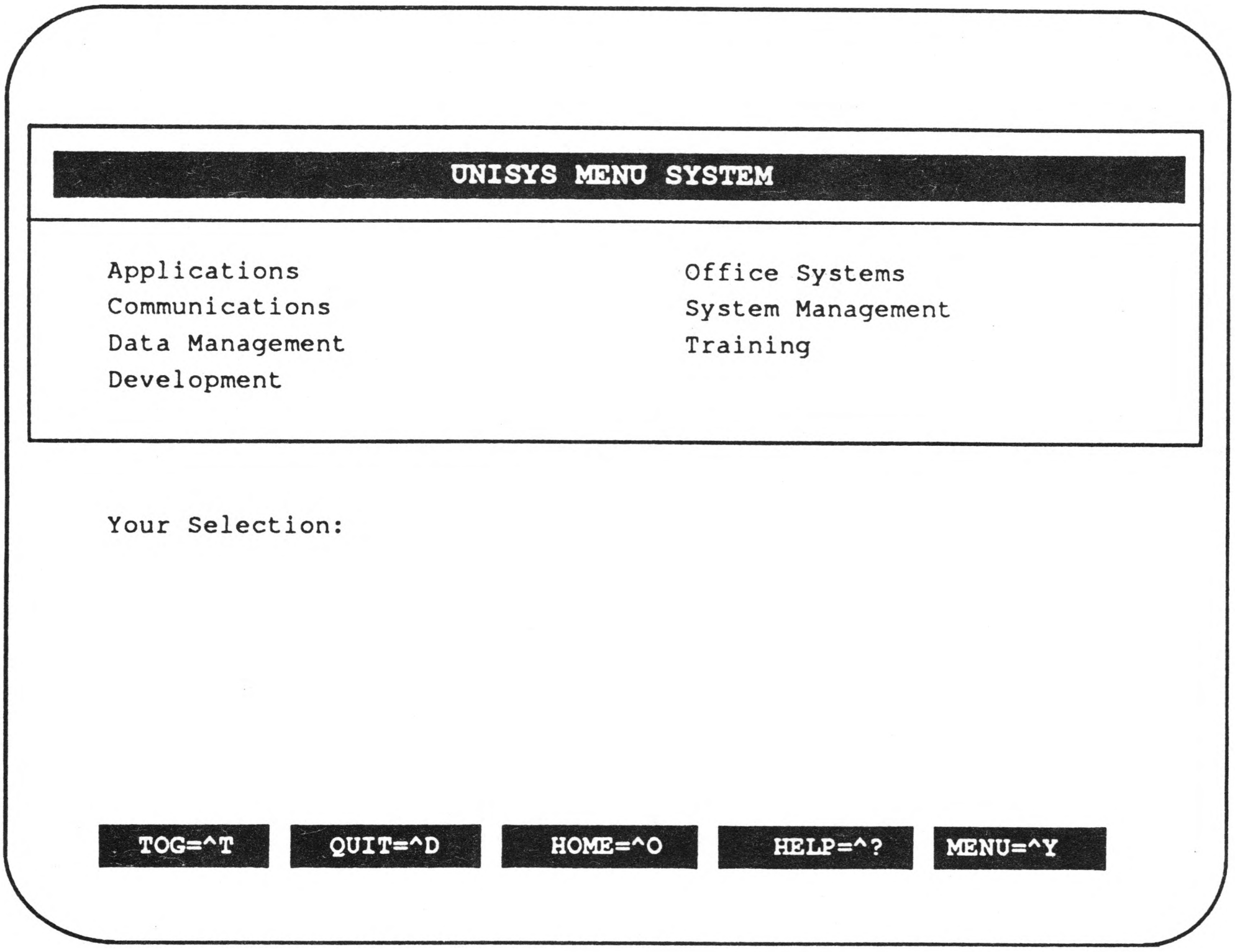
To back up file systems your system must be in single-user mode. Perform the following steps:

> **WARNING**
>
> It is recommended that a backup or restore of any file system be performed while in single-user mode. Under certain conditions (e.g., mounted file system, processes using file system), performing a backup/restore could result in a corrupted file system and loss of data.

1. Log in to the Unisys Menu System by entering:

   sa < cr >

2. Your screen displays the **UNISYS MENU SYSTEM** menu:



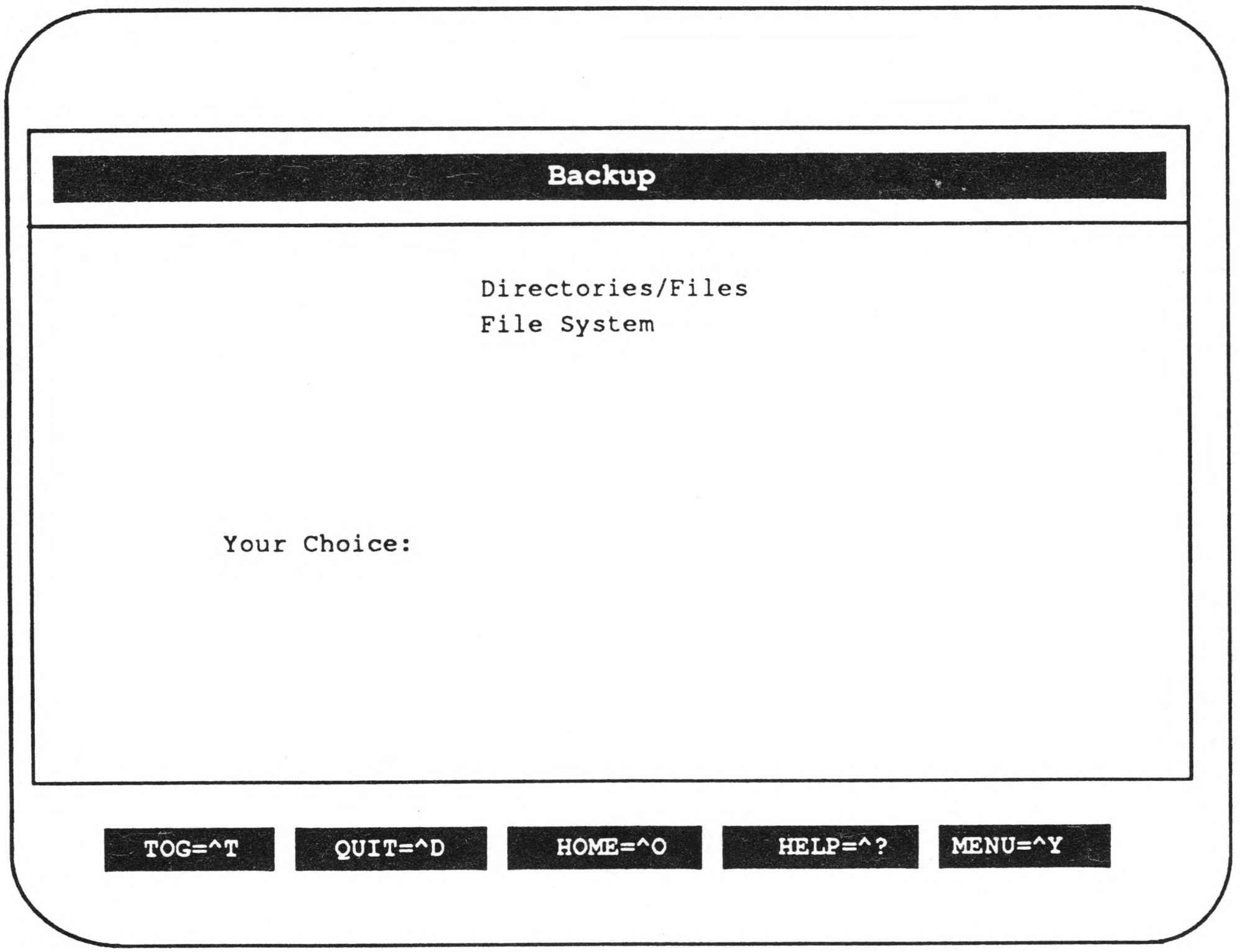
Using the arrow keys, select **System Management** and press **< cr >**.

3. The **SYSTEM MANAGEMENT** menu appears as follows:

```
                    SYSTEM MANAGEMENT

          Add              End              Print
          Backup           Find             Receive
          Call             Format           Remove
          Change           Install          Rename
          Check            List             Restore
          Compare          Make             Schedule
          Copy             Merge            Send
          Display          Mount            Sort
          Edit             Move             Unmount


          Your selection:

 TOG=^T   QUIT=^D   HOME=^O   HELP=^?   MENU=^Y
```

Using the arrow keys, select Backup and press < cr >.

4. The **Backup** menu appears as follows:



Using the arrow key, select **File System** and press < **cr** >.

5. Your screen displays step-by-step instructional messages. Respond appropriately to any prompts.

6. When the backup is complete, the system rewinds the tape.

7. When the tape is finished rewinding, remove it from the drive, make sure it is write-protected, and label it.

8. Be sure to store your tape in a safe place.

Section 5
Installing System Software

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Section 5
Installing System Software

Introduction

The Base tape is provided to be used for first-time system installation, to upgrade from a previous release, or to restore your current system if unrecoverable problems occur.

Although these procedures are simple and clearly presented, operating system installation should be performed by someone familiar with UNIX operating systems.

Installation Options

The two main installation procedures that are available are installation (for a first-time installation or to upgrade) and maintenance (to recover from file loss or disk corruption). The installation procedure destroys the entire contents of your system disk and is used for new installations or at any other time that you do a destructive installation.

Installation Using the INSTALL SYSTEM Option

Caution

An installation using the INSTALL SYSTEM option is a destructive or raw installation. The procedure destroys the entire contents of your system disk. The following procedure should be used for a first-time installation of System V Base software on a new U 5000 hardware system. Refer to the "Archiving and Restoring Files" section.

This subsection provides specific information for the installation of system software in the U 5000/30, U 5000/35, U 5000/50, or U 5000/55 system. System software is on the INSTALL tape that is distributed with your system.

It is important that you insert and remove the streaming tape when requested. Make sure the cartridge tape is write-protected. Insert the streaming tape in the top (or only) drive. Make sure that the MANUAL/AUTO LOAD toggle switch is in the MANUAL position.

Installing the software is a menu-driven procedure with self-explanatory lead-through prompts.

After the system files are set up, the system is relinked and reloaded and the **setterm** login prompt is displayed.

The system **root** device is either an internal 5.25-inch hard disk or an external SCSI hard disk in an expansion cabinet. Screen displays that come up on your console during the installation process show which device is the system root device. This document shows both disk drive names in the screen examples.

When initializing the operating system, it is important to answer the user response messages correctly to assure that the system software is installed properly. After each entry for a user response message, press < **cr** >. After you press < **cr** >, either the cursor is automatically positioned at the next user response message or the next step in the software installation process is performed.

If an error is made and you have not pressed < **cr** >, enter the pound sign (#) enough times to backspace to the error then make the correct entry. For example:

MS#DT is equivalent to **MDT**

If an error message appears during system software installation, refer to the Error Message Manual.

Installing the Operating System from Tape

After connecting the control console to the processor Channel B connector on the back of your U 5000 system, power up the system. The **SELECT STARTUP FUNCTION** menu appears on the console screen. Refer to the "Turning On the Power" subsection in the "Initializing the System" section for information on how to turn on the system.

Note: *Configure the console terminal with the following characteristics (refer to the documentation accompanying your particular terminal):*

Xon/Xoff
Newline Off
7 bits/character
Parity on, even
Reverse Video Attribute
9600 Baud
1 stop bit

The install system function on the **SELECT STARTUP FUNCTION** menu permits initial installation of the system software. Follow these procedures to begin installation.

1. From the **SELECT STARTUP FUNCTION** menu, select Item 2, **INSTALL SYSTEM**, by entering the number **2**. The terminal displays:

```
ENTER DEVICE NAME
```

2. Enter the tape device name **ssg1** for the U 5000/35 or U 5000/55, or **st01** for the U 5000/30 or U 5000/50, and press **< cr >** to continue. The terminal displays:

```
INSERT TAPE MEDIA
PRESS SPACEBAR TO CONTINUE
```

3. Insert the cartridge tape labeled INSTALL. Press the **< spacebar >** to begin the installation process.

   Note: *The hardware level of your particular system determines whether or not the following screen appears. If it does not, go on to Step 5.*

```
RETENSION TAPE? (Y/N):
```

   To assure maximum reliability, the tape should be retensioned.

   Note: *The tape is automatically retensioned during Phase 1.*

4. Enter **y** to retension the tape.

5. Regardless of whether you retension the tape, the screen displays various informational messages:

```
AVAILABLE MEM SIZE = $xxxxxx
SYSTEM OKAY
STARTUP FUNCTIONS COMPLETE

System Release:    x.xx.xx
System Version:    xxxxxxx
System Nodename:   xxxxxxx
System Processor:  xxxxxxx
Caches Enabled:    Processor ATC Program Data*

maxmem = xxxxxxxx
user memory = xxxxxxxx
max program size = xxxxxxxx
```

6. Begin Phase 1 of the system software installation process after the following message appears:

```
System Installation / Restore / Maintenance - Phase 1
```

System Installation, Restore, and Maintenance Phase 1

Description

The five main objectives of Phase 1 of the system installation are:

1. Determining the system disk (root device)

2. Checking and retensioning the tape

3. Checking the disk format information and performing a disk format if necessary

---

*This message is not displayed on a U 5000/30 without optional cache installed.

4. Creating the INSTALL file system

5. Successfully terminating Phase 1

Procedures

Perform the following steps to execute Phase 1 of the system installation, restore, and maintenance.

1. After the system installation, restore, and maintenance message appears on the screen, the terminal displays:

```
STEP 1:  DETERMINE SYSTEM DISK (ROOT DEVICE)
```

Note: *This may take up to 10 minutes.*

The system returns with a list of available **root** devices. Enter the appropriate device when the following prompt appears:

```
Please enter a four character root device name from the list
  above:
```

2. Enter one of the previously listed devices followed by a < **cr** >. If an invalid entry is entered, the following messages appear:

```
Invalid device name.
PRESS the NEWLINE or RETURN key to re-enter.
```

3. After entering a correct device name the following messages appear:

```
STEP 2:  CHECK AND RETENSION TAPE

CHECKING tape format
RETENSIONING tape
```

At this point the system is querying a selected disk to determine whether or not you have a valid disk format and determining current partitioning.

The system detects an invalid disk format because of any of the following reasons:

- The disk device is cleared.
- A new unformatted disk is installed.
- An electrical disturbance destroyed the integrity of the file system.

The system gives you a choice either to format or not to format the specified disk device. The terminal displays the following information:

```
STEP 3:  CHECK DISK FORMAT INFORMATION
Disk device is formatted.

Do you wish to reformat the disk? (y/n):  <.>
```

4. Under normal conditions you do not need to reformat the disk. The disks that come with your initial system are already formatted. If during the installation process an error occurs and the file system cannot be made, the disk must be formatted again. Enter **y** and press < **cr** > to format the disk. Also, if you are installing a new release of the operating system on a disk that has been in use, you must format the disk (after taking the precaution of backing up the disk contents).

   Enter **n** and press < **cr** > to continue installation. The following message appears:

```
Do you have any bad blocks to enter?  (y/n):  <.>
```

   If you have known bad blocks, enter **y** and follow the instructions in the "Formatting a Disk Device" section for entering bad blocks. After completing these procedures, return to this sec-

tion, enter **n** in response to the prompt previously described, and continue with Step 5.

If this is an initial installation, you only need to enter the bad blocks recorded by the disk manufacturer on the Media Error Log or the Media Defect List. Although it is possible to avoid entering bad blocks by answering **n** in response to the prompt, this could result in future disk read errors.

Note: *Several informational messages are displayed on the screen during the disk format. Respond to any prompt that appears.*

5. When the disk is formatted the terminal displays the following:

```
STEP 4:  CREATING INSTALL FILE SYSTEM
COPYING data.....................................
VERIFYING data...................................
```

Note: *No operator action is required for Step 5 of system software installation Phase 1. The process takes approximately seven minutes to complete. If you receive an error message, refer to the Error Message Manual.*

6. When the system copies and verifies data, the following message appears:

```
STEP 5:  SUCCESSFUL TERMINATION OF PHASE 1
```

The system is automatically reloaded, and the login and release level information is displayed:

```
AUTO REBOOT NOW IN PROGRESS

LOADING "/unix.sti" FROM DEVICE xxxx
LOAD COMPLETE
```

```
AVAILABLE MEM SIZE = $xxxxxx
SYSTEM OKAY
STARTUP FUNCTIONS COMPLETE

System Release:          xx.xx.xx
System Name:             xxxxx.x
System Version:          x

Physical Memory:         xxxxxxx/xxxxxxxx
Available Memory:        xxxxxxx/xxxxxxxx
Free User Memory:        xxxxxxx/xxxxxxxx
User Virtual Memory:     xxxxxxxx/xxxxxxxx

Caches Enabled:          Processor ATC Program Data*
```

System Installation, Restore, and Maintenance Phase 2

Description

The two main objectives of Phase 2 of the system installation, restore, and maintenance are:

1. Determining the system disk from Phase 1 and beginning the creation of the file system

2. Successfully terminating Phase 2 and reloading the operating system

Procedures

Phase 2 begins with the following display:

```
System Installation / Restore / Maintenance Phase 2

Select one of the following and press the <Return> key.
```

---

*This message is not displayed on a U 5000/30 without optional cache installed.

```
1 - System installation

2 - System restore from mag tape

3 - System restore from streaming tape

4 - File system maintenance

Enter selection number:  <.>
```

To perform system installation from the tape, proceed to the "System Installation" subsection in this section.

To perform system restore from the tape, proceed to the "System Restore" subsection in this section.

To perform system maintenance from the tape, proceed to the "System Maintenance" subsection in this section.

System Installation

Perform the following steps to execute system installation.

1. Enter **1** and press < **cr** > if this is an initial installation. When you do this, the following messages appear informing you of the progress of the system installation:

```
Error logging initiated
System installation (phase 2) beginning
Determining system disk (root device)

The root device determined in phase 1 is the disk which will
   contain
the operating system files.
```

2. If the swap (Partition 15) area is less than 20000 the following appears:

   Note: *Swap partition should be a minimum of 20000 blocks (10 megabytes).*

```
The swap partition has xxxxx blocks assigned.  The
  recommended number of blocks is 20000.

Do you want to repartition the root device? (y/n)
```

A partition is a subset of the physical disk that is treated as a logical device. Each hard disk can be subdivided into 15 different partitions (1-f). Partition 0 is considered to be the whole disk.

Only the size (Number of Blocks) for each partition is entered; the starting locations (Block Offset) are determined by the values entered for each partition size. All entries are automatically rounded to the appropriate cylinder boundary as defined by the disk.

Note: *The root disk can only be partitioned using the INSTALL tape. Note also that the size of the swap area on the root disk can only be changed using the INSTALL tape.*

If you change the default swap partition on root, you must begin the install process again. You are prompted when to do this.

A message appears which asks you to enter the number of blocks. Enter the size of the partition by specifying either the number of 512-byte physical blocks or the number of megabytes with an M suffix for each partition. For example, enter **10240** or **5M**.

Note: *As you change the size of a partition, the swap partition is adjusted.*

3. After indicating which type terminal you are using you are allowed to change the partitioning of the **root** device through a full screen partitioning editor. If you do not wish to change the partitioning, press the GO key in the partitioning editor. Press < **cr** > again to continue.

   The following message displays asking you to define your terminal before partitioning:

```
DEFINING YOUR TERMINAL

TERMINFO NAME        TERMINAL MODEL

pcu                  - pc to unix
unknown              - unknown terminal type
uvt1210              - 1210  :1210 in standard mode
uvt1220              - 1220  :1220 in standard mode
uvt1224              - 1224  :1224 in standard mode
xtalk                - xtalk  : XTALK 3.5 or lower
```

   From the list, choose the TERMINFO NAME for the terminal you are using.

   Note: *If your terminal model is not included in the display, enter* ***unknown*** *and refer to your System Documentation.*

4. At the following message prompt, enter the terminfo name and press < **cr** >.

```
Enter the TERMINFO NAME for the terminal you are using:
```

   If you enter an invalid entry, you are prompted to redisplay the full list and reenter your terminfo name.

The command keys are listed in Table 5-1.

Note: *The numeric key pad is used to access these commands. Do not use the numeric keypads for entering data.*

Table 5-1. Command Keys

Command Key	Description
1	Provides field help
2	Enter the operating system call
3	or < **Ctrl** > **b** Redraw
4	Return to previous
5	Set automatic help on and off
6	Provide keyboard operation help
7	or < **Ctrl** > **c** Quit this program
8	Return to first input field
9	GO
0	Function depends on context

After you enter the correct terminfo model and press < **cr** >, the following screen appears:

```
Partition Disk Device

Disk drive:  [.........................]

Partition Start   Size     Partition  Start     Size
     0: [.......]  [.......]          8:  [.......]   <.......>
     1: [.......]  <.......>          9:  [.......]   <.......>
     2: [.......]  <.......>     10 (a): [.......]   <.......>
     3: [.......]  <.......>     11 (b): [.......]   <.......>
     4: [.......]  <.......>     12 (c): [.......]   <.......>
     5: [.......]  <.......>     13 (d): [.......]   [.......]
     6: [.......]  <.......>     14 (e): [.......]   [.......]
     7: [.......]  <.......>     15 (f): [.......]   [.......]

<1> Field help  <3> Redraw  <5> Auto help: off  <7> Quit     <9> Go
<2> Shell       <4> Return  <6>  Keyboard help  <8> Reenter  <10> Unused
```

5. Enter the size for partition 1 (the number of 512-byte physical blocks, or the number of megabytes with an "M" Suffix . . . e.g., 10240 or 5M). Note that the size is aligned on the next higher track or cylinder boundary.

   Enter **9** from the numeric key pad when you have finished entering the information about your disk partitions or if you had no information to enter.

   If you made no change in the disk partitions the installation continues with the default partitions and you see the following system messages:

```
The partition operation for the root device passed.
Continuing with the installation with the new partitions.
```

   You are now ready to continue the installation with the partitions.

   Note: *Several informational messages are displayed on the screen. Respond to any prompt which may appear. This may take up to 12 minutes.*

6. When the following prompt appears, continue the system software installation process with the "System Installation and Maintenance Phase 3" subsection in this section.

```
The system will be automatically reloaded.

Press the <Return> key to continue:
```

System Restore

Note: *The system restore applies only to the* ***root*** *file system. Restore additional file systems through the sa menus. This may take up to 12 minutes.*

Perform the following steps to execute system restore.

1. Enter **2** or **3** and press < **cr** >, depending upon the type of media you are using. The following messages appear informing you of the progress of the system restore:

   Note: *The file system restore procedure should be performed only by a system administrator.*

```
Error Logging Initiated

System Restore ( Phase 2 ) Beginning

STEP 1:  Restoring root device
```

2. The root device determined in Phase 1 is the disk which contains the restored operating system files. The following messages appear:

```
Rewinding tape
Please remove the install/restore tape cartridge at this
     time.
```

   Note: *The number of backup tapes is determined during the file system backup through the menus.*

3. Remove the cartridge tape from the system and press < **cr** >.

4. Locate the tape with the following information written on the label:

```
Contents:  System Backup
           System Partition Information
```

   Insert the tape into the tape drive.

5. Press < **cr** > to continue, or enter **x** to cancel. The following messages appear:

```
Retrieving system partition information
successful retrieval of system partition information
```

6. Remove the tape from the tape drive and press < **cr** >.

7. Locate the tape with the following information written on the label:

```
Contents:  System Backup, SEQUENCE NUMBER: 1

File System Name:          root
Partition Name:            /dev/rdsk/xxxxxx
Tape Cartridge Number:     1
```

Insert the tape into the tape drive and press < **cr** >. The following messages appear:

```
Checking and Retensioning tape

Verifying root file system backup tape

Restoring the root file system

Begin copy from tape cartridge number 1 to partition
     /dev/rdsk/c0d0s1
End copy of tape cartridge number 1
```

Note: *If additional backup tapes are required, the system will prompt you for them.*

8. When the backup is complete the following messages appear:

```
Root file system restored
Remove the tape cartridge from the tape drive.
```

9. Remove the tape from the tape drive and press < **cr** >. The following messages appear:

```
Step 2: Checking for mounted file systems

No mounted file system encountered - Restore complete
```

```
Step 3:  Successful termination of Phase 2 - System Restore

The system will be automatically reloaded.

Press the <Return> key to continue:
```

10. Press < **cr** > to continue. The `login:` prompt appears when the system is restored.

System Maintenance

1. You can restore the remaining file systems by entering **4** and pressing < **cr** >, which is the **`File system maintenance`** selection.

   Note: *The file system maintenance procedure should be performed only by a system administrator.*

   At this point, a small file system resides in the swap area on the hard disk. If the remainder of the disk contains one or more file systems, they are still there. By entering **4** and pressing < **cr** >, you can mount the **root** file system and perform maintenance, such as repairing a damaged boot block or a corrupted password file. There is a node, **/dev/dsk/rootfs**, that is provided to mount the **root** file system. To mount the **root** file system, enter:

   /etc/mount /dev/dsk/rootfs /mnt

2. After making these repairs, do not continue the installation process (otherwise the file systems are recreated). Unmount all file systems by entering:

   /etc/umount /dev/dsk/rootfs

3. Enter **sync**, wait two or three minutes, remove the tape, and reboot the system.

System Installation and Maintenance Phase 3

Description

The two main objectives of Phase 3 system software installation are:

1. Installing and verifying the Base file system
2. Relinking and reloading the operating system

Relinking and reloading the operating system includes:

- Setting up the system files
- Checking for system controllers
- Configuring the tty ports for the HPSIO boards present in the system during installation
- Relinking the kernel

Notes: *If there is a change in the asynchronous/synchronous controller configuration after the system is installed, use the* ***sa*** *menus to reconfigure the system.*

First select ***System Management*** *from the* ***UNISYS MENU SYSTEM*** *menu. From the* ***SYSTEM MANAGEMENT*** *menu, select* ***Change****. Finally, select* ***Backplane Configuration****.*

Procedures

Phase 3 procedures begin with the following display:

```
System Installation / Maintenance Phase 3

Select one of the following and press the <Return> key.

1 - Perform System Installation

2 - Perform File System Maintenance

Enter Selection Number:  <.>
```

To perform system installation from the tape, proceed to the "System Installation" subsection in this section.

To perform system maintenance from the tape, proceed to the "System Maintenance" subsection in this section.

System Installation

Use the following steps to perform a system installation. A description of how to perform file system maintenance follows the system installation instructions.

Note: *Copying and verification of the Base system files takes approximately 20 minutes. During this time, the system displays a series of progress messages.*

1. Enter **1** and press < **cr** > to continue installation. The following messages appear:

```
Error logging initiated
Installing base system files
Rewinding tape

Check tape format
Advancing tape to base files
Copying base files
Verifying base files
Installing base system files complete.
Rewinding tape
The installation tape is no longer needed in the
    installation process.
You may now remove the tape from the drive.
```

2. Remove the tape from the drive and press < **cr** >. The following messages appear:

```
Setting up the system files

CREATING lost and found directory for file system check
Begin Backplane Configuration
Determining current system configuration.
Checking the system controllers.
     .
     .
     .
Updating System Files

Making device nodes

Adding Shell Layering.
Preparing for relink of operating system.

Relinking the operating system
The relink will take approximately 5 minutes to
    complete...
Starting process:  date

Successful link of the operating system

INSTALLING Administration Files

RELOADING new operating system
     .
     .
     .
Press the <Return> key to continue:
```

Note: *Make a backup copy of the tape and store the original tape in a safe place.*

3. At this time the operating system is being booted.

```
LOADING "/unix" FROM DEVICE xxxx
LOAD COMPLETE
AVAILABLE MEM SIZE = $xxxxxx
```

```
SYSTEM OKAY
STARTUP FUNCTIONS COMPLETE
```

4. Enter the correct date by responding to the following prompt:

```
Enter the correct date (mmddhhmmyy):
```

A response will ask if the date is correct.

5. Select the system type by responding to the following prompt:

```
Please Select System Type

(1)  UNISYS 5000/30 or upgraded 5000/30
(2)  UNISYS 5000/35
(3)  UNISYS 5000/50 or upgraded 5000/50
(4)  UNISYS 5000/55

Your Selection:
```

6. When the selection is made the following messages appear.

```
The system is going single user. Please wait.

Unmounting File Systems

The system is in single user mode.
U5000
Login as 'setterm' to continue
Release x.xx.xx
login:
```

7. At the login prompt log in as **setterm**.

From the following list, choose the TERMINFO NAME for the terminal you are using.

TERMINFO NAME		TERMINAL MODEL
pcxt	-	ibm_pc
pt	-	BURROUGHS® Programmable Terminal
pt-rom	-	BURROUGHS PT Boot ROM (RS 232 Line)
to300-00A	-	300-00A: standard setup
to300-00W	-	300-00W: standard setup
to300-01W	-	300-01W: standard setup
tvi925	-	TeleVideo™ 925
tvi955	-	TeleVideo 955
un	-	unknown terminal type
uvt100	-	1220/PC™: VT100™ mode
uvt1210	-	1210: standard setup
uvt1220	-	1220: standard setup
uvt1224	-	1224: standard setup
uvt1224-8	-	1220/PC-8: UVT1224 8-bit mode
uvt1224g	-	1224g: standard setup
uvt1224gpc	-	Unisys UVT1224G PC terminal
uvt200	-	1220/PC: VT200 mode
uvt52	-	1210/1220/PC: VT52 mode
xtalk	-	PC: CROSSTALK® 3.5 or below

Notes: *If your terminal model was not included in the display, enter* ***unknown*** *and refer to your System Documentation. Default terminal type is uvt1224.*

If you entered ***unknown*** *to specify that the* ***terminfo*** *name is not defined for your terminal model, continue the system installation process by defining the* ***terminfo*** *conventions for the terminal used to install the system software.*

After you define your terminal, the following message appears:

```
SUCCESSFUL TERMINATION OF DEFINING YOUR TERMINAL
```

The following steps are required to complete installation.

1. Set the timezone
2. Set the date and time
3. Install system O/S extensions
4. Add devices and distribute file systems
5. Install terminals and printers
6. Install application software
7. Install users

8. In response to the login prompt, enter **sa** to continue the configuration with the **UNISYS MENU SYSTEM** menu.

   a. Set the timezone.

      Set the timezone by selecting **System Management** from the **UNISYS MENU SYSTEM** menu, then select **Change**. Specify **Timezone** from the resulting menu and complete the required items to set your timezone.

   b. Set the date and time.

      Set the date and time by selecting **System Management** from the **UNISYS MENU SYSTEM** menu, then select **Change**. Specify **Date and Time** from the resulting menu and complete the required items to set the date and time.

   c. Install system O/S extensions.

      Install the operating system extensions by selecting **System Management** from the **UNISYS MENU SYSTEM** menu, then select **Install**. Select **/dev/rmt/c0d0v** from the list of install devices. Refer to the "Installing Extension Tape Products" subsection.

   d. Add devices and distribute file systems.

      Add disk and tape devices by selecting **System Management** from the **UNISYS MENU SYSTEM** menu, then select

Add. Specify **Disk** or **Tape drive** from the resulting menu and complete the required items to add your disk or tape devices.

e. Install terminals and printers.

Install terminals and printers by selecting **System Management** from the **UNISYS MENU SYSTEM** menu, then select **Add**. Specify **Device** from the resulting menu and complete the required items to install your terminals and printers. Refer to the "Printer Verification Utilities" appendix in the Menu System Operations Guide.

f. Install application software.

Install application software by selecting **System Management** from the **UNISYS MENU SYSTEM** menu, then select **Install**. Select **/dev/rmt/c0d0v** from the list of install devices. Refer to the individual product installation guide.

g. Install users.

Install users on your system by selecting **System Management** from the **UNISYS MENU SYSTEM** menu, then select **Add**. Specify **User** from the resulting menu and complete the required items to install the users.

9. System installation is now complete.

System Maintenance

You can restore the remaining file systems by entering 2 and pressing < **cr** >, which is the **Perform File System Maintenance** selection.

Note: *The file system maintenance procedure should be performed only by a system administrator.*

At this point, a small file system resides in the **root** device area on the hard disk. If the remainder of the disk contains one or more file systems, they are still there. By entering 2, you can check to see why the system installation and maintenance phase 3 failed by looking in the **/etc/SYSLOG** file.

Installing Extension Tape Products

The Extension tape contains the 11 products described in Table 5-2.

Table 5-2. Extension Tape Products

Product	Description
ACCT	Provides a complete system accounting facility. This provides methods to collect per-process resource utilization data, record connect sessions, and charge fees to specific logins.
CC10	Includes the 16-bit C compiler, assembler, linker, and loader plus all related libraries.
COMM	Includes standard system-to-system asynchronous communications facilities. This includes **uucp** and **cu** and the utilities required to configure and maintain these facilities. This is installed with the Base Module and exists here only to facilitate reinstallation.
DEVEL	Includes all the tools required to support software development on the system as well as the SCCS facility.
EXTEN	Contains a variety of operating system utilities useful to some users.
GRAPH	Includes all graphics facilities as unsupported software.
INTER	Includes utilities for international character sets. See **ifilter**(1), **llp**(1), and **lsort**(1) for a detailed description of these utilities.
LANG	Language messages for MNLS.
MAN	Includes manual pages in a packed, nroffed format under the directory **/usr/catman**. This extension is the on-line manuals. The extension name is **docc**.
MISC	Contains files such as games and the unsupported **lpr** line printer spooler facility.
PUBDOM	Includes unsupported Public Domain software.

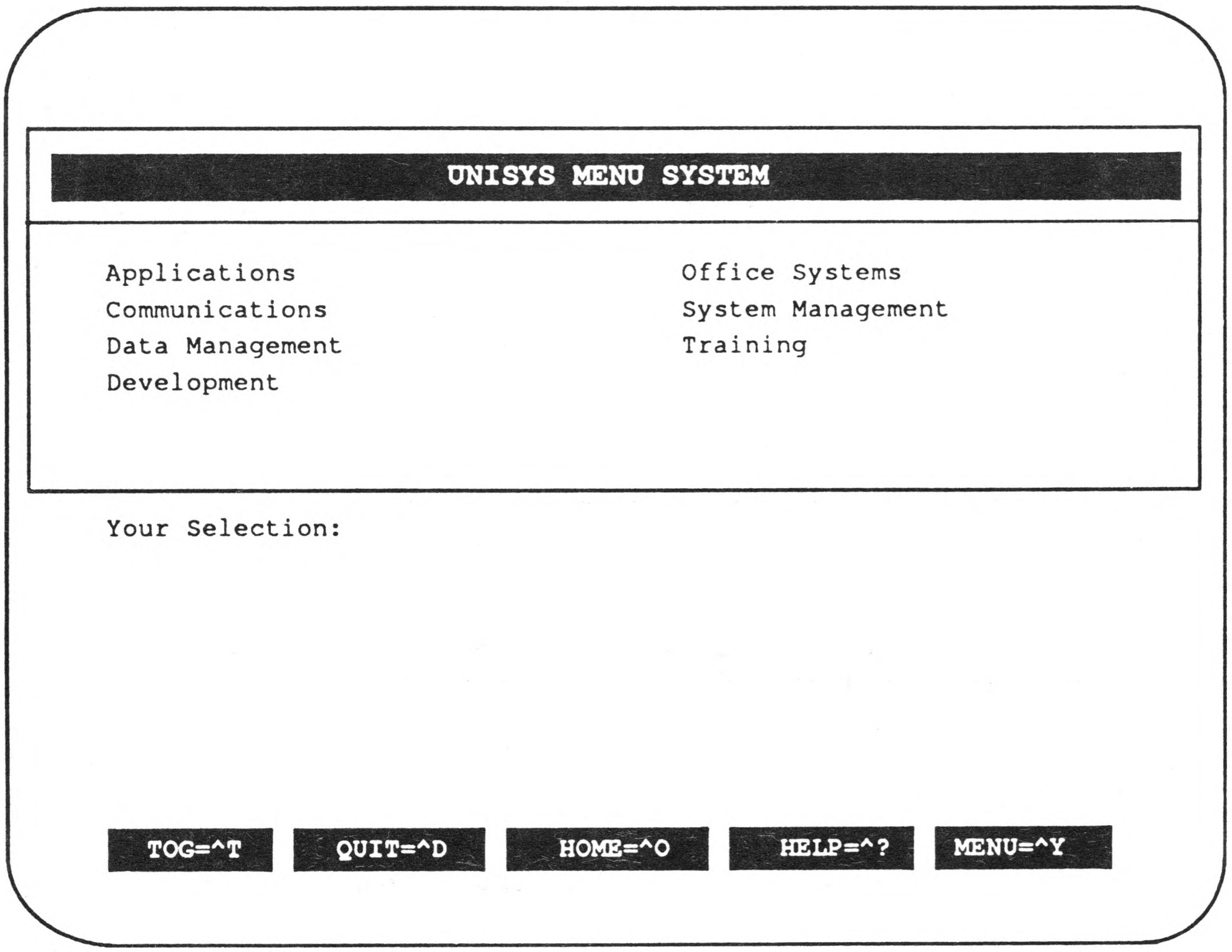
Note: *You must have previously installed the Base tape, booted the system from a disk, and the system must be in single-user mode before attempting to install the Extension tape.*

To install products from the Extension tape perform the following steps:

1. After the Base tape is installed and system boot-up from disk complete, log in by entering:

   sa < cr >

2. The **UNISYS MENU SYSTEM** menu appears as follows:



Using the arrow keys, select **System Management** and press **< cr >**.

Note: *If you would like more information about the **UNISYS MENU SYSTEM** menu, refer to the Menu System Operations Guide.*

3. The **SYSTEM MANAGEMENT** menu appears as follows:

```
                    SYSTEM MANAGEMENT

          Add              End              Print
          Backup           Find             Receive
          Call             Format           Remove
          Change           Install          Rename
          Check            List             Restore
          Compare          Make             Schedule
          Copy             Merge            Send
          Display          Mount            Sort
          Edit             Move             Unmount


          Your selection:

 TOG=^T   QUIT=^D   HOME=^O   HELP=^?   MENU=^Y
```

Using the arrow keys, select **Install** and press **< cr >**.

4. As a result, your screen displays a list of installation tape devices by node name.

   Note: *The list of INSTALL DEVICES may differ.*

```
Tape device node names have these
letters with the following meanings:

     v - Streaming Tape (always)
     n - No rewind on close
     H - High density, high speed
     h - High density, low speed
     M - Low density, high speed
     m - Low density, low speed
```

```
INSTALL DEVICES

Page 1 of 1

1    /dev/rmt/c0d0v

Enter Choice:
```

TOG=^T | QUIT=^D | HOME=^O | HELP=^? | MENU=^Y

Highlight the number corresponding to the name of your installation tape device using the arrow keys. (This is usually **/dev/rmt/c0d0v** for the QIC tape drive.) Press < **cr** >.

5. Your screen displays:

```
*************************************************************
* NOTICE!                                                   *
* It is recommended that upon completion of this install,   *
* you backup your release tapes.  Refer to the Software     *
* Installation Guide for your system for instructions       *
* on backing up your tapes.                                 *
*************************************************************
```

Note: *This message does not apply to backing up the Development tape. You should make a backup of the Development tape.*

```
Please wait ...

** Load install tape on device:  /dev/rmt/c0d0v
```

6. Insert the Extension tape in the tape drive and press < **cr** >. The following message appears:

```
** Do you wish to tension the tape /dev/rmt/c0d0v? (y/n)-->
```

7. Enter **y** or **n** and press < **cr** >. Your screen displays:

```
Reading Table-Of-Contents, please wait...
```

The table-of-contents from the tape is now displayed. Select the products you want to install by using the arrow keys to highlight the product to be selected. You may also type in the product code to select a product. Enter < **Ctrl** > **w** to select a product. To view additional pages enter < **Ctrl** > **j**. Or, if you want to install all tape products at once, enter < **Del** > < **Ctrl** > **w** on each page of products. If you highlight any product by mistake move to it with the arrow keys and enter < **Ctrl** > **u**.

When finished with the selection process, press < **cr** > to initiate the installation of the selected products.

8. For each product installed, your screen displays the following messages:

```
Positioning tape, please wait.

Installing product name...

Getting product files from tape to work area, please
  wait...
Setting up Environment.
     .
     .
     .
Removing temporary work area, please wait...

Installing XXXX/CHAIN...

Getting product files from tape to work area, please wait...

Copying files...
     .
     .
     .
Removing temporary work area, please wait...
```

Note: *To complete the language selection, enter the specific language base(s) or* **all** *to select all bases.*

9. After all selected products are installed, the following messages appear:

```
Positioning tape, please wait.

Installation complete...
```

```
Rewinding tape, please wait...

You may now remove the tape from the drive...
```

Remove the Extension tape from the tape drive and press **< cr >**.

Removing Extension Tape Products

To remove Extension tape products your system must be in single-user mode. Perform the following steps:

1. Log in to the Unisys Menu System by entering:

   sa < cr >

2. Your screen displays the **UNISYS MENU SYSTEM** menu:

```
                    UNISYS MENU SYSTEM

        Applications                    Office Systems
        Communications                  System Management
        Data Management                 Training
        Development

  Your Selection:

  TOG=^T   QUIT=^D   HOME=^O   HELP=^?   MENU=^Y
```

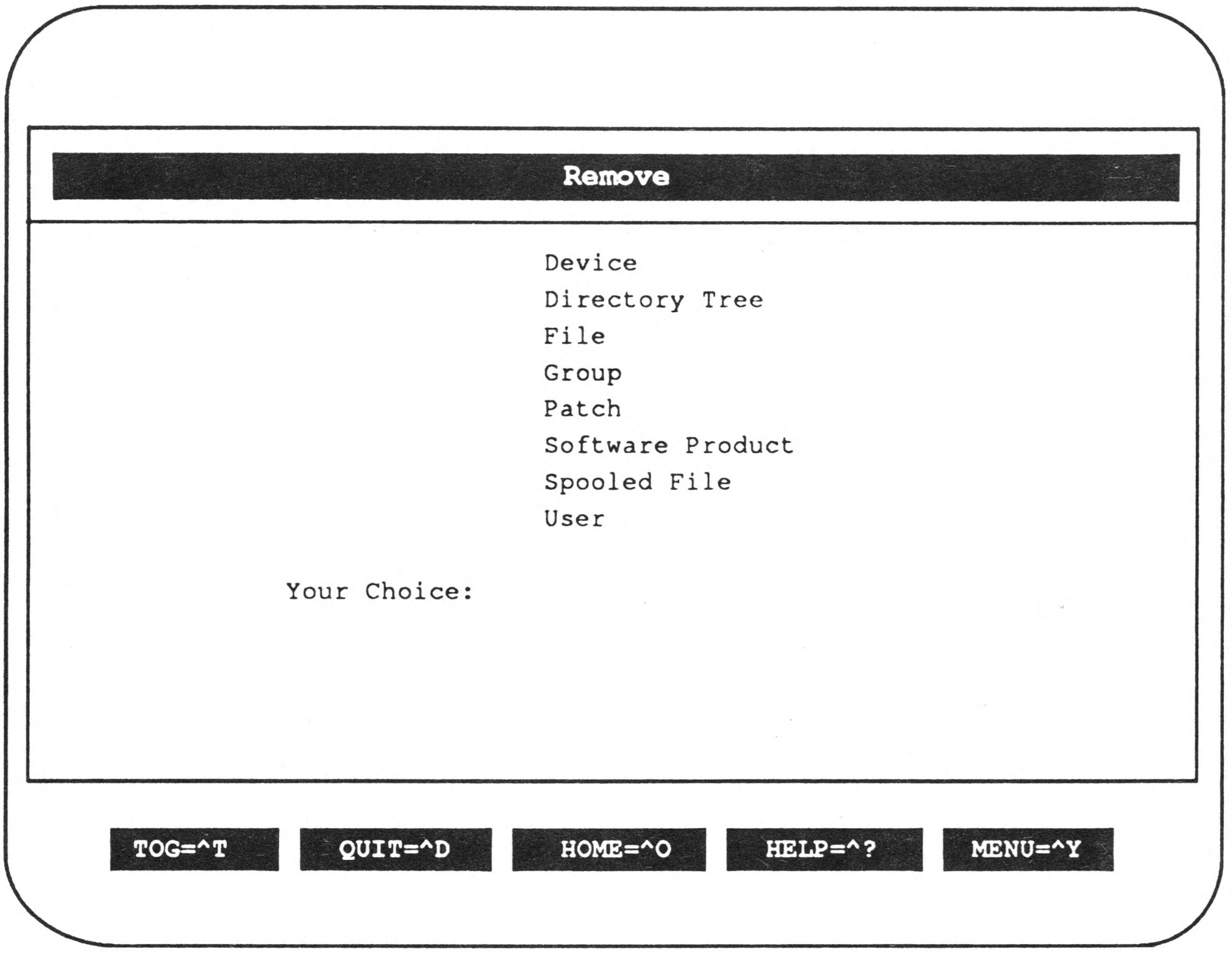
Using the arrow keys, select **System Management** and press **< cr >**.

3. The **SYSTEM MANAGEMENT** menu appears as follows:

```
                    SYSTEM MANAGEMENT

          Add              End              Print
          Backup           Find             Receive
          Call             Format           Remove
          Change           Install          Rename
          Check            List             Restore
          Compare          Make             Schedule
          Copy             Merge            Send
          Display          Mount            Sort
          Edit             Move             Unmount


          Your selection:

 TOG=^T   QUIT=^D   HOME=^O   HELP=^?   MENU=^Y
```

Using the arrow keys, select **Remove** and press **< cr >**.

4. The **Remove** menu appears as follows:



Using the arrow keys, select **Software Product** and press < **cr** >.

5. As a result, your screen displays a list of all installed software products. Select the product you want to remove by using the arrow keys to highlight the product to be removed. To view additional pages enter < **Ctrl** > **j**. To remove a product highlight the product to be removed and press < **cr** >.

6. Your screen displays:

```
Do you really want to remove product <product name EXT>?
     (yes/no)
```

Enter **y** and press **< cr >**.

7. Your screen displays the following messages:

```
Removing product EXT xxxx...
Setting up Environment.
     .
     .
     .
Press RETURN to Continue
```

8. Your screen displays the following messages:

```
Product removal complete...
Press any key to continue.
```

9. To remove additional products repeat Steps 4 through 8.

6. Installing a Patch Tape

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Installing a Patch Tape

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Section 6
Installing a Patch Tape

Installing Patch Tape Products

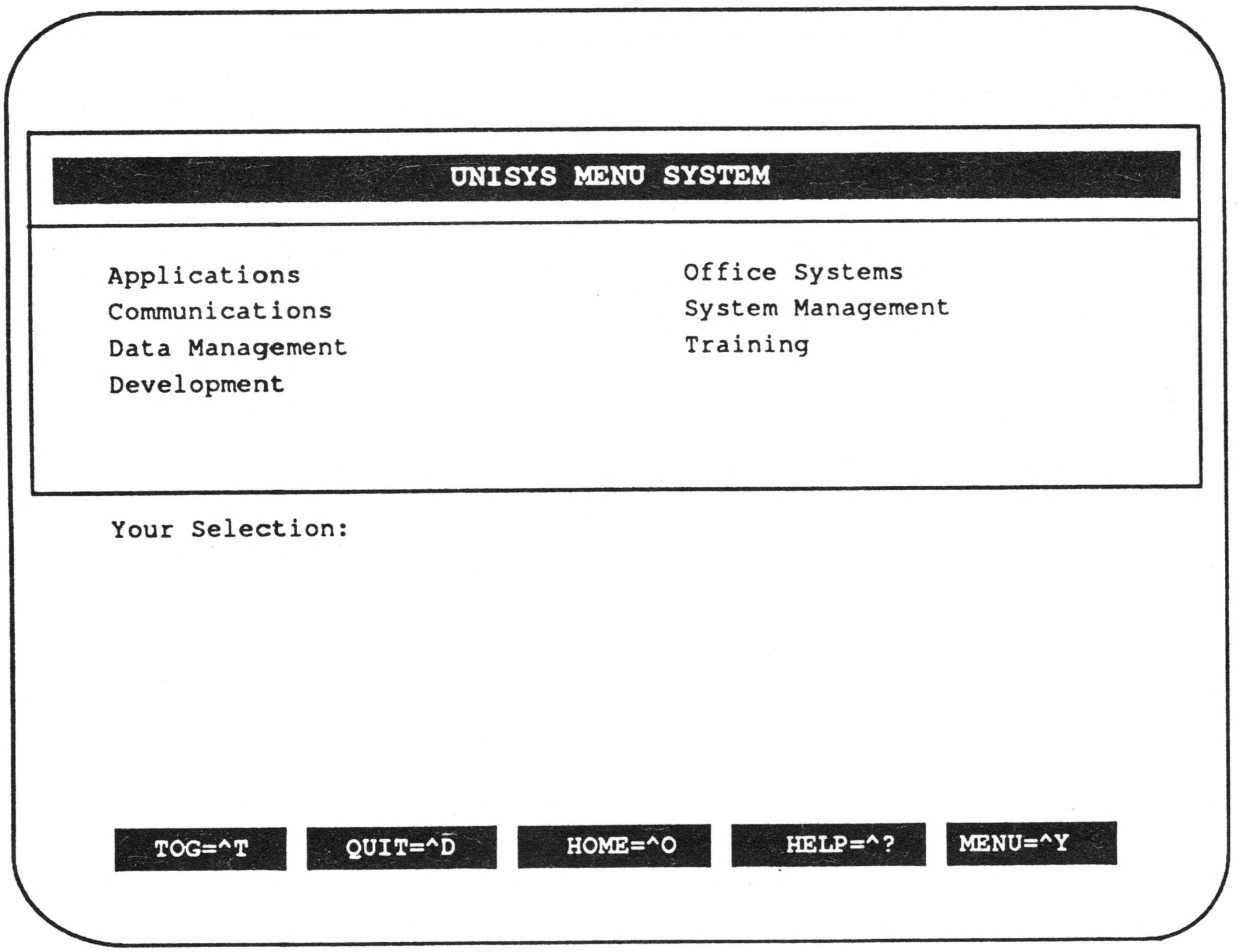
To install products from the Patch tape perform the following steps:

Note: *You must have previously installed the Base tape, booted the system from a disk, and the system must be in single-user mode before attempting to install the Patch tape.*

1. After the Base tape has been installed and system boot-up from disk complete, log in by entering:

   sa < cr >

2. The **UNISYS MENU SYSTEM** menu appears as follows:



Using the arrow keys, select **System Management** and press **< cr >.**

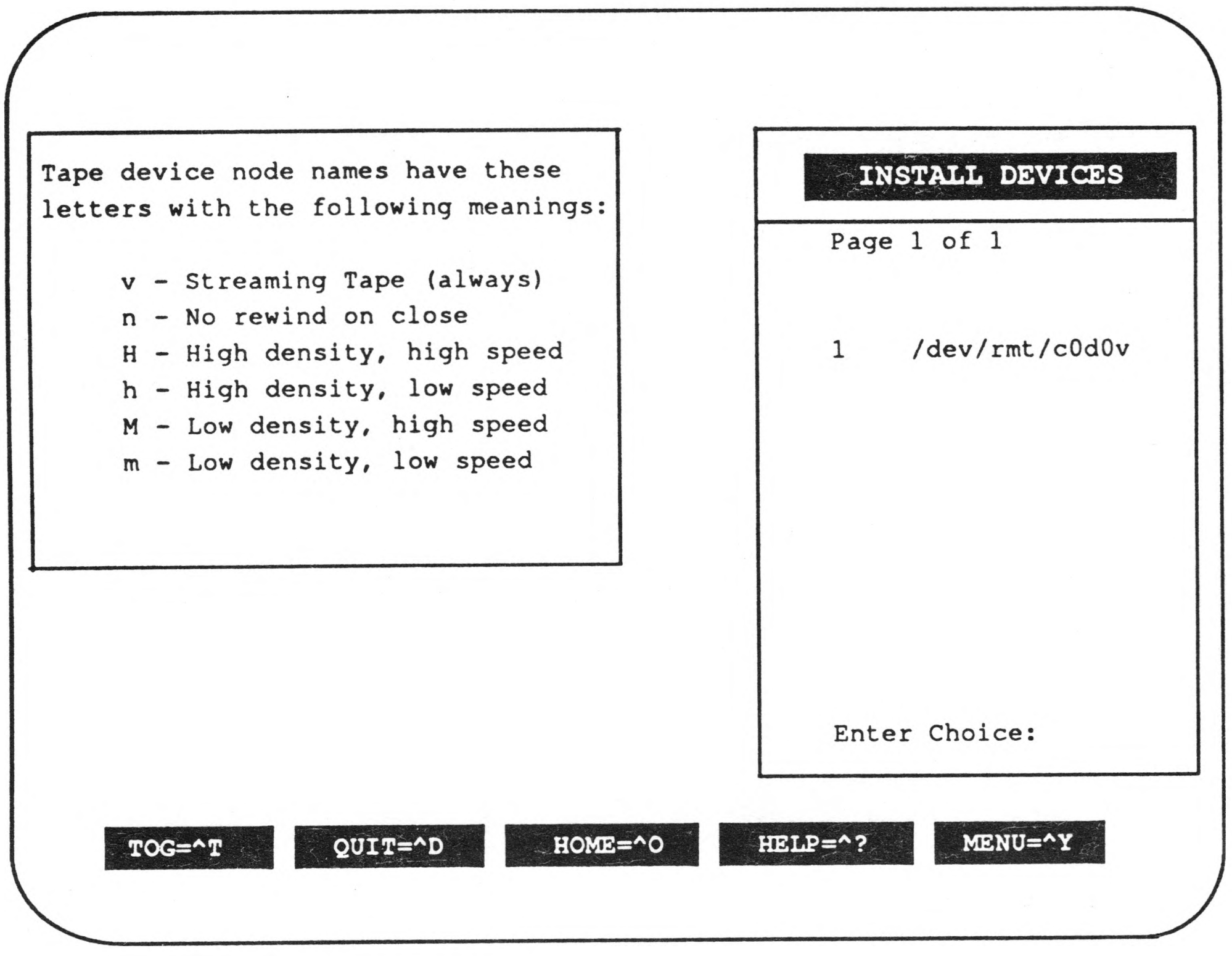
Note: *If you would like more information about the* ***UNISYS MENU SYSTEM*** *menus, refer to the Menu System Operations Guide.*

3. The **SYSTEM MANAGEMENT** menu appears as follows:

```
                    SYSTEM MANAGEMENT

          Add              End              Print
          Backup           Find             Receive
          Call             Format           Remove
          Change           Install          Rename
          Check            List             Restore
          Compare          Make             Schedule
          Copy             Merge            Send
          Display          Mount            Sort
          Edit             Move             Unmount


          Your selection:

 TOG=^T    QUIT=^D    HOME=^O    HELP=^?    MENU=^Y
```

Using the arrow keys, select **Install** and press **< cr >**.

4. As a result, your screen displays a list of installation tape devices by node name.



Highlight the number corresponding to the name of your installation tape device using the arrow keys. (This is usually **/dev/rmt/c0d0v** for the QIC tape drive.) Press < **cr** >.

5. Your screen displays the following messages:

```
*************************************************************
* NOTICE!                                                   *
* It is recommended that upon completion of this install,   *
* you backup your release tapes.  Refer to the Software     *
* Installation Guide for your system for instructions       *
* on backing up your tapes.                                 *
*************************************************************

Please wait ...

** Load install tape on device:  /dev/rmt/c0d0v
```

6. Insert the Patch tape in the tape drive and press < **cr** >. The following message appears:

```
** Do you wish to tension the tape /dev/rmt/c0d0v? (y/n)-->
```

7. Enter **y** or **n** and press < **cr** >. Your screen displays:

```
Reading Table-Of-Contents, please wait...
```

The table-of-contents from the tape is now displayed. Select the products you want to install by using the arrow keys to highlight the product to be selected. You may also type in the product code to select a product. Enter < **Ctrl** > **w** to select a product. To view additional pages enter < **Ctrl** > **j**. Or, if you want to install all tape products at once, enter < **Del** > < **Ctrl** > **w** on each page of products. If you highlight any product by mistake, move to it with the arrow keys and enter < **Ctrl** > **u**.

When finished with the selection process, press < **cr** > to initiate the installation of the selected products.

8. For each product installed, your screen displays the following messages:

```
Position tape, please wait ...

Installing product name...

Getting product files from tape to work area, please
    wait ...
Setting up Environment.
    .
    .
    .
Removing temporary work area, please wait ...

Installing XXXX/CHAIN ...

Getting product files from tape to work area, please
    wait ...
Creating Transfer file
Copying files to system
    .
    .
    .
Removing temporary work area, please wait...
```

9. After all selected products are installed, your screen displays the following messages:

```
Installation complete ...

Rewinding tape, please wait ...

You may now remove the tape from the drive ...
```

Remove the Patch tape from the tape drive.

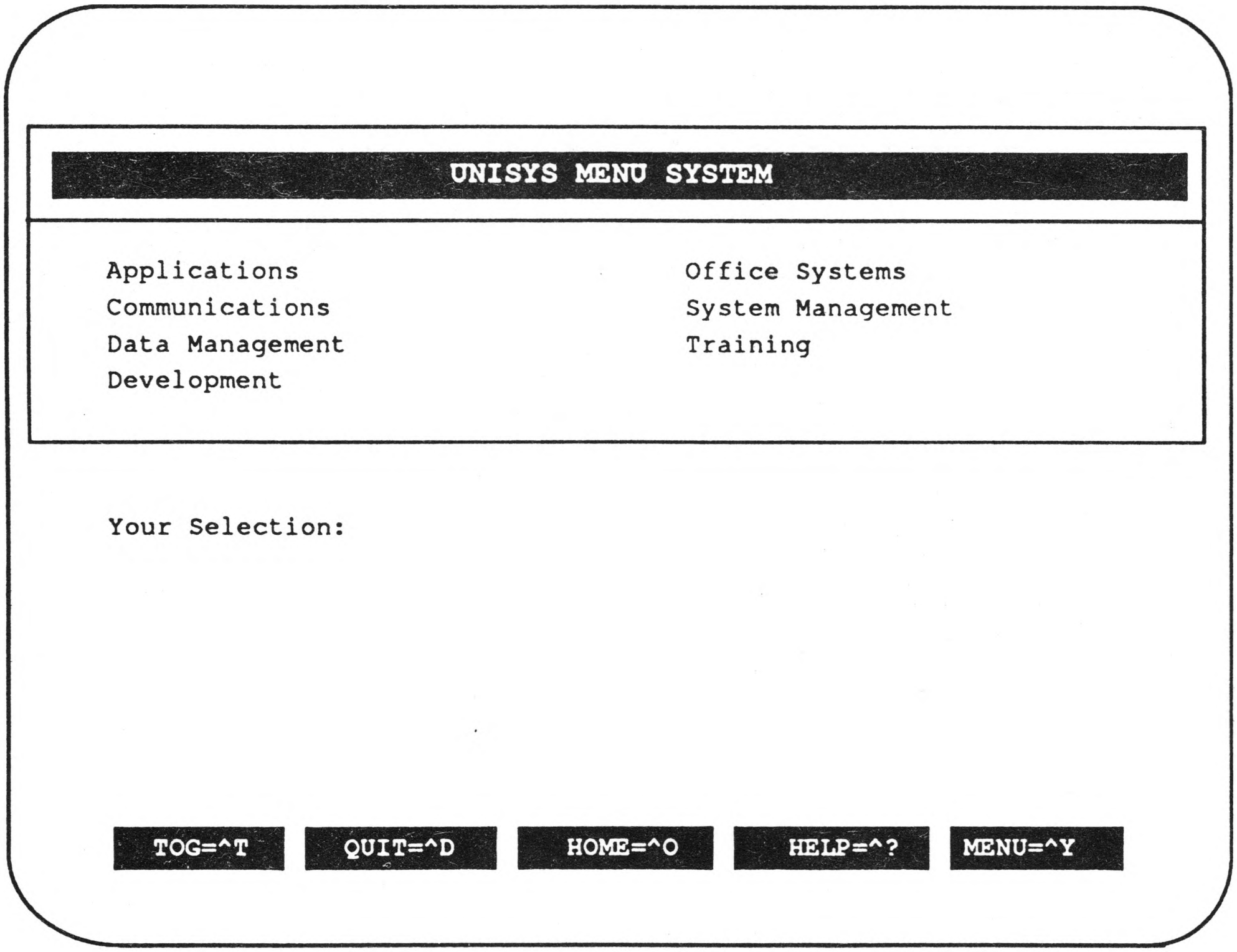
Removing Patch Tape Products

To remove Patch tape products your system must be in single-user mode. Perform the following steps:

1. Log in to the Unisys Menu System by entering:

   sa < cr >

2. The **UNISYS MENU SYSTEM** menu appears as follows:



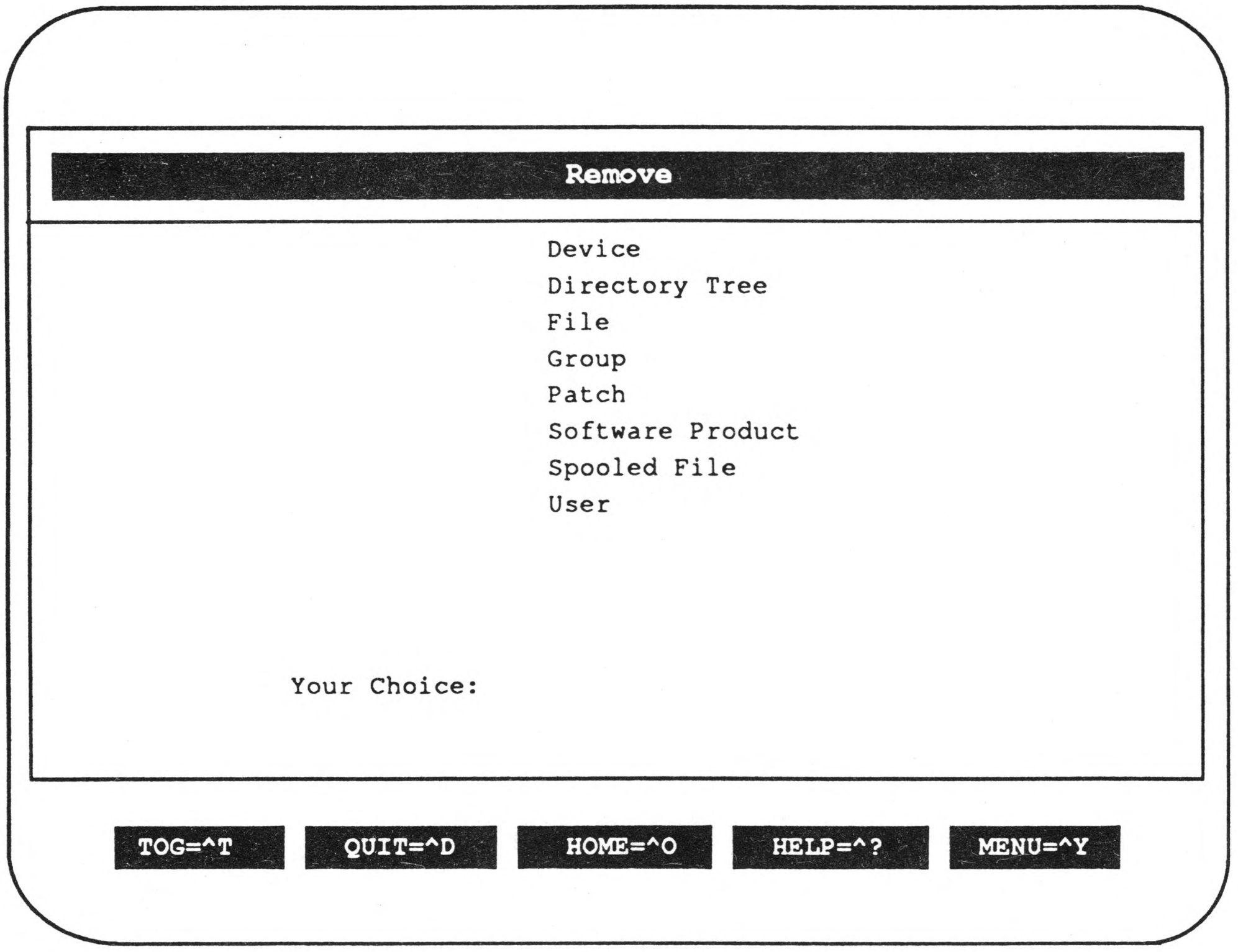
Using the arrow keys, select **System Management** and press **< cr >**.

3. The **SYSTEM MANAGEMENT** menu appears as follows:

```
                    SYSTEM MANAGEMENT

          Add             End             Print
          Backup          Find            Receive
          Call            Format          Remove
          Change          Install         Rename
          Check           List            Restore
          Compare         Make            Schedule
          Copy            Merge           Send
          Display         Mount           Sort
          Edit            Move            Unmount


          Your selection:

  TOG=^T    QUIT=^D    HOME=^O    HELP=^?    MENU=^Y
```

Using the arrow keys, select Remove and press < cr >.

4. The **Remove** menu appears as follows:



Using the arrow keys, select **Patch** and press < **cr** >.

5. As a result, your screen displays a list of all installed patches. Select the patch you want to remove by using the arrow keys to highlight the patch to be removed. To view additional pages enter < **Ctrl** > **j**. To remove a patch highlight the product to be removed and press < **cr** >.

6. Your screen displays the following messages:

```
Removing patch EXT product name.
Setting up Environment.
     .
     .
     .
Press RETURN to Continue
```

7. Your screen displays the following messages:

```
Product removal complete ...
Press any key to continue.
```

8. To remove additional patches repeat Steps 4 through 8.

Section 7
Shutting Down

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Section 7
Shutting Down

Introduction

The System V operating system allows several methods to shut down the system. If your system is in multiuser mode, use the following procedure to take it to single-user mode.

Going from Multiuser to Single-User Mode

The following procedures are done at the console terminal.

Note: *Your screen displays may vary slightly depending upon your system configuration.*

1. Before you go from multiuser to single-user mode, make sure that no other users are on the system.

   Note: *If users are on the system and the system must be brought to single-user mode, inform the users that the system is going to single-user mode and give a grace period to log out. Refer to the User's Reference Manual for the* ***wall*** *command to send a broadcast message.*

2. At the `login:` prompt, enter **shutdown** and press **< cr >**.

   Your screen displays the following messages:

```
System Shutdown . . .
```

```
Do you want to shut down the system or go to single user
    mode?
Enter 'y' to go to single user.  Anything else shuts the
    system down.:
```

3. **Enter y and press < cr > to go to single-user mode.**

```
Going to single user mode.

Shutdown started.  date

Broadcast Message from root (xxxx) on U5000 date

THE SYSTEM IS BEING SHUT DOWN NOW!!!
The system will be shut down in xx seconds.
Log off now or risk your files being damaged.

INIT:  New run level:  0
Changing to state 0 (single user).
System services are now being stopped.
cron aborted:  SIGTERM
     .
     .
     .
Cron Terminating Normally

Error Logging Stopped

Unmounting File Systems

The system is in single user mode.
U5000
Customer Login Banner goes in file /etc/issue.
RELEASE 3.00.01
login:
```

4. **You are now in single-user mode.**

Going from Multiuser to Single-User Mode Using Menus

The following procedures are done at the console terminal.

Note: *Your screen displays may vary slightly depending upon your system configuration.*

1. At the `login:` prompt, enter **sa** and press < **cr** >.

2. Before you go from multiuser to single-user mode, make sure that no other users are on the system.

Note: *If users are on the system and the system must be brought to single-user mode, inform the users that the system is going to single-user mode. This is done by selecting* ***System Management*** *from the* ***UNISYS MENU SYSTEM****, then selecting* ***Send****, then* ***Message to Users****.*

3. Enter single-user mode by selecting **System Management** from the **UNISYS MENU SYSTEM** menu, then select **Change**. Specify **State Multi, Single User** from the resulting menu and complete the required items to change to single-user mode. The screen displays the following messages:

```
The current system run state is Multi user mode.
In the process of changing run states, you will
be LOGGED OFF the system.

Do you really want to change run state to Single user mode?
     (y/n)
Answering (n) RETURN will terminate request to change run
     state.
Any other response followed by RETURN will proceed with the
     change

Your response:
```

4. **Enter y and press < cr > to change run state.**

```
Please wait...

System Shutdown...

Do you want to shut down the system or go to single user
     mode?
Enter 'y' to go to single user.  Anything else shuts the
     system down.:
```

5. **Enter y and press < cr > to go to single-user mode.**

```
Going to single user mode.

Shutdown started.  date

Broadcast Message from root (xxxx) on U5000 date

THE SYSTEM IS BEING SHUT DOWN NOW!!!
The system will be shut down in xx seconds.
Log off now or risk your files being damaged.

INIT:  New run level:  0
Changing to state 0 (single user).
System services are now being stopped.
cron aborted:  SIGTERM
     .
     .
     .
Cron Terminating Normally

Error Logging Stopped

Unmounting File Systems
```

```
The system is in single user mode.
U5000
Customer Login Banner goes in file /etc/issue.
RELEASE 3.00.01
login:
```

6. You are now in single-user mode.

Shutting Down with the shutdown Login

The following procedures are done at the console terminal.

Notes: *Your screen displays may vary slightly depending upon your system configuration.*

Refer to the User's Reference Manual for the ***wall*** *command to send a broadcast message.*

1. At the "`login:`" prompt, enter **shutdown** and press **< cr >**. Your screen displays the following messages:

```
System Shutdown...

Do you want to shut down the system or go to single user
   mode?
Enter 'y' to go to single user.  Anything else shuts the
   system down.:
```

2. Enter any key except **y** and press **< cr >**. Your screen displays the following messages:

```
Shutting system down.

Shutdown started.  date

Broadcast Message from root (xxxx) on U5000 date
```

```
THE SYSTEM IS BEING SHUT DOWN NOW!!!
The system will be shut down in xx seconds.
Log off now or risk your files being damaged.

INIT:  New run level: 6
The system is coming down.  Please wait.
System services are now being stopped.
Process accounting stopped.
Unmounting File Systems
     .
     .
     .
Performing killall to terminate processes not associated
   with shutdown.
     .
     .
     .
The system is down.
```

Shutting Down with Menus

The following procedures are done at the console terminal.

Notes: *Your screen displays may vary slightly depending upon your system configuration.*

Refer to the User's Reference Manual for the ***wall*** *command to send a broadcast message.*

1. At the `login:` prompt, enter **sa** and press **< cr >**.

2. If you want to shut down your U 5000 system using the Unisys Menu System, select **System Management** from the **UNISYS MENU SYSTEM** menu, then select **Change**. Specify **State Multi, Single User** from the resulting menu and complete the required items to shut down your system.

Note: *You must be in multiuser mode to shut down the system through the menus.*

```
The current system run state is Multi user mode.
In the process of changing run states, you will
be LOGGED OFF the system.

Do you really want to change run state to Single user mode?
     (y/n)
Answering (n) RETURN will terminate request to change run
     state.
Any other response followed by RETURN will proceed with the
     change

Your response:
```

3. Enter **y** and press **< cr >** to change run state.

```
Please wait...

System Shutdown...

Do you want to shut down the system or go to single user
     mode?
Enter 'y' to go to single user.  Anything else shuts the
     system down.:
```

4. Enter any key except **y** and press **< cr >** to shut down the system.

```
Shutting system down.

Shutdown started.  date

Broadcast Message from root (xxxx) on U5000 date

THE SYSTEM IS BEING SHUT DOWN NOW!!!
The system will be shut down in xx seconds.
Log off now or risk your files being damaged.
```

```
INIT:  new run level:  6
The system is coming down.  Please wait.
System services are now being stopped.

cron aborted:  SIGTERM
Cron Terminating Normally
     .
     .
     .
Error Logging Stopped

Unmounting File Systems
     .
     .
     .
Performing killall to terminate processes not associated
     with shutdown.
     .
     .
     .
The system is down.
```

Power Down

1. Before you power down the system, make sure that no other users are on the system.

2. Run the shutdown program (refer to the "Shutting Down with the shutdown Login" subsection).

3. Open the upper front panel access door.

4. Turn the On/Off system power switch to the Off position. Refer to Figures 7-1 and 7-2 for the appropriate system.

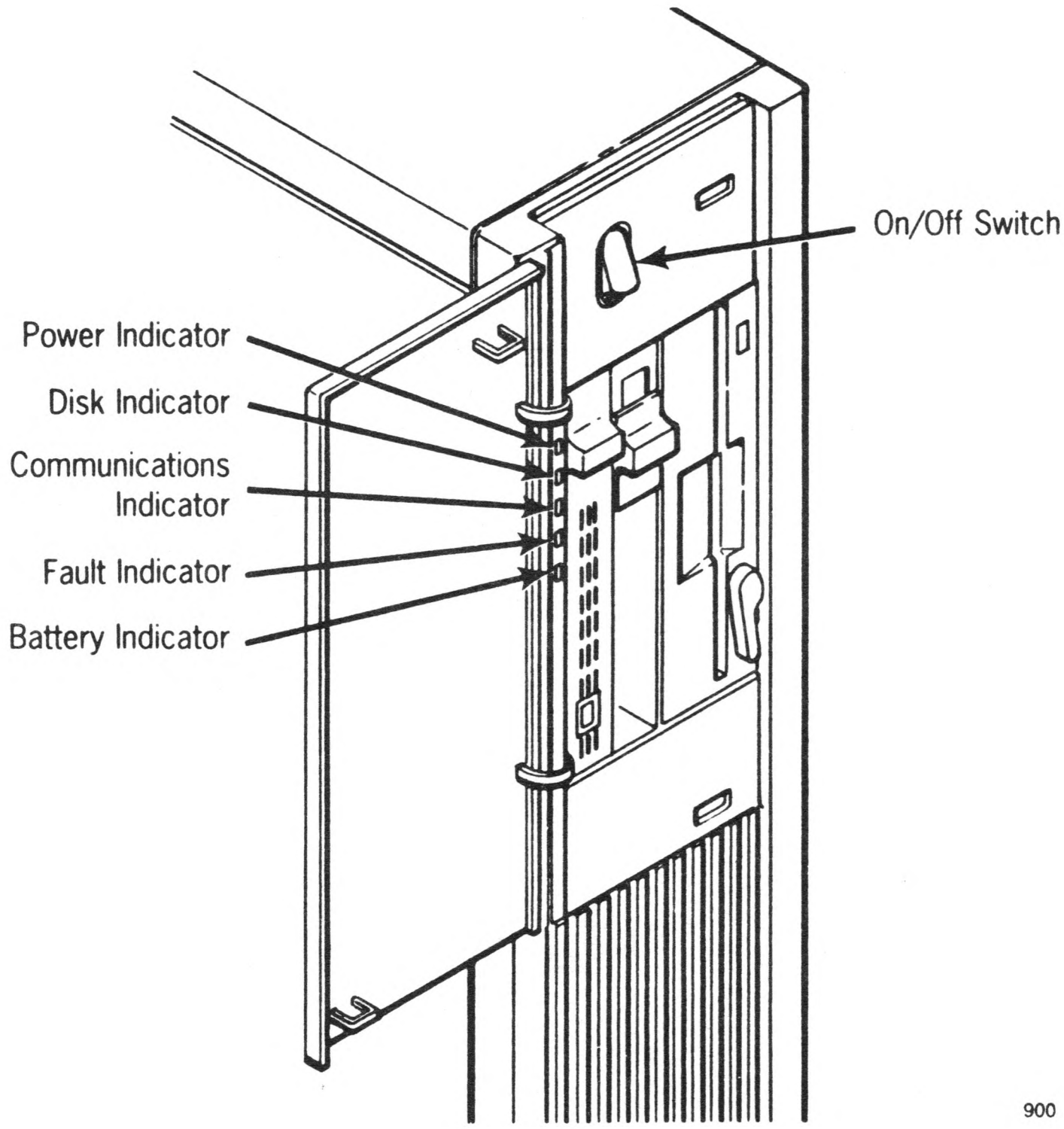

Figure 7-1. U 5000/30/35 System Power Switch

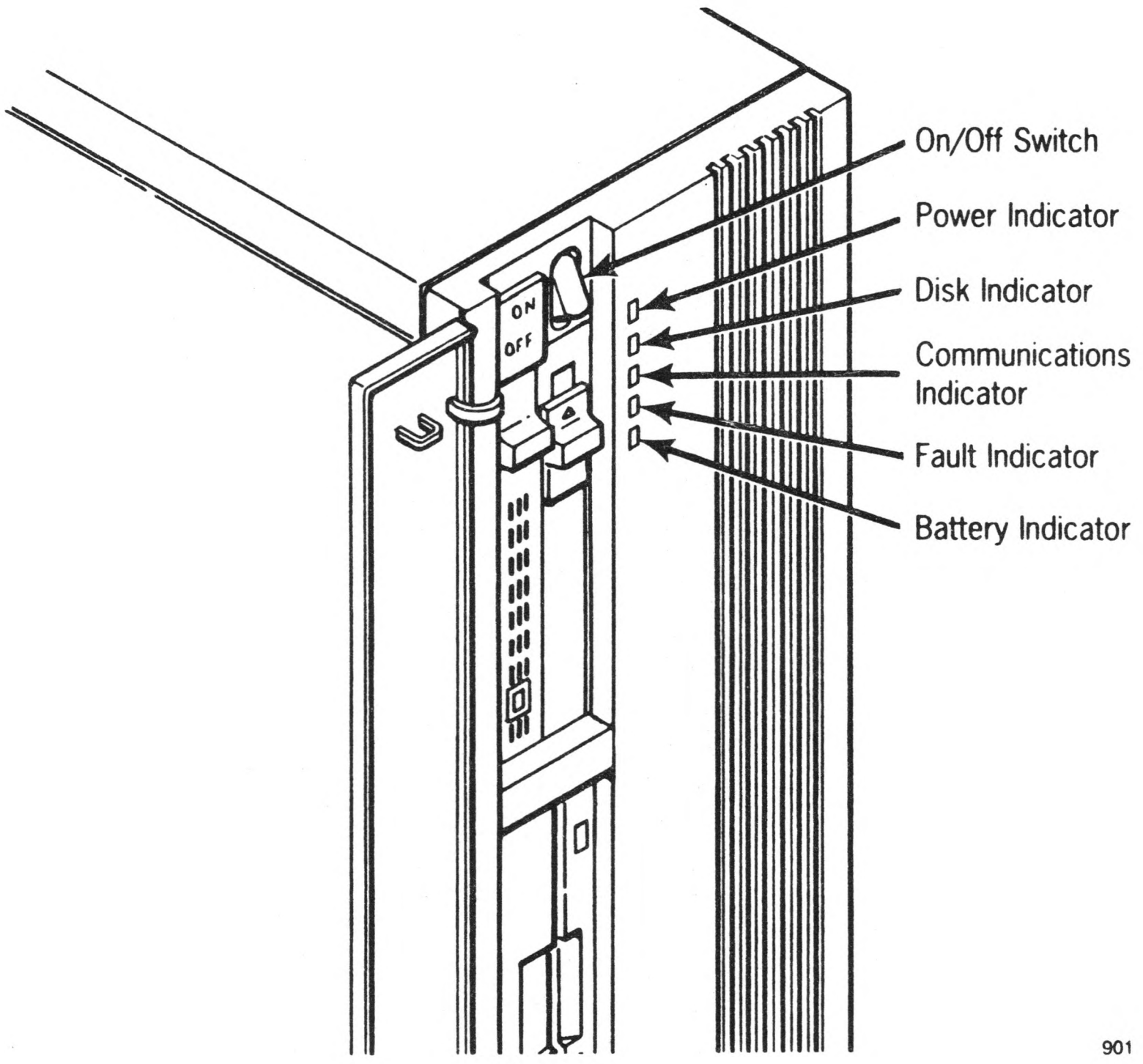

Figure 7-2. U 5000/50/55 System Power Switch

5. Turn off the terminal which serves as your console.

6. Turn off any externally connected SCSI devices and peripherals.

Power Outage When System Is On-Line — With UPS

The uninterruptible power supply (UPS) keeps your system running long enough to perform an orderly shutdown (approximately three to five minutes) in the event of a power outage. The UPS performs the following tasks:

1. Signals the computer that it has lost power
2. Directs all users on the system to log out immediately
3. Proceeds with an orderly shutdown

After shutdown, the system signals the UPS to disconnect power. When the power is stable again, bring the system back up by re-booting.

Power Outage When System Is On-Line — Without UPS

If you lose power to your system and do not have a UPS, when you power-up again a message that the file system has been checked and needs repairing appears on the screen. The system automatically begins the repairs. The message is the same in the event of a power surge assuming hardware damage is not extremely severe.

Minimal Emergency Shutdown Procedures

To exit the system quickly (approximately 30 seconds) in an emergency situation enter:

init 6 < cr >

You must have **root** privileges or be the system administrator to use this command. This command automatically logs all users out of the system and saves all files. It shuts the system down to the point where it is safe to turn the power off.

Section 8
Booting Up

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Executing a Manual Boot 8-4
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Section 8
Booting Up

Introduction

This section covers the booting sequences: autoboot and manual boot.

Once you have initialized the power sources and have the power-up monitor displayed on your screen, you are ready to boot the system. You have the option of setting up your system to invoke the autoboot sequence at the next, or subsequent, power up or executing a manual boot (with the appropriate operator panel settings).

Autoboot Versus Manual Boot

The autoboot sequence begins when the MANUAL/AUTO LOAD switch is in the AUTO LOAD position and the RESET switch is toggled. Refer to Figure 8-1 for the button locations.

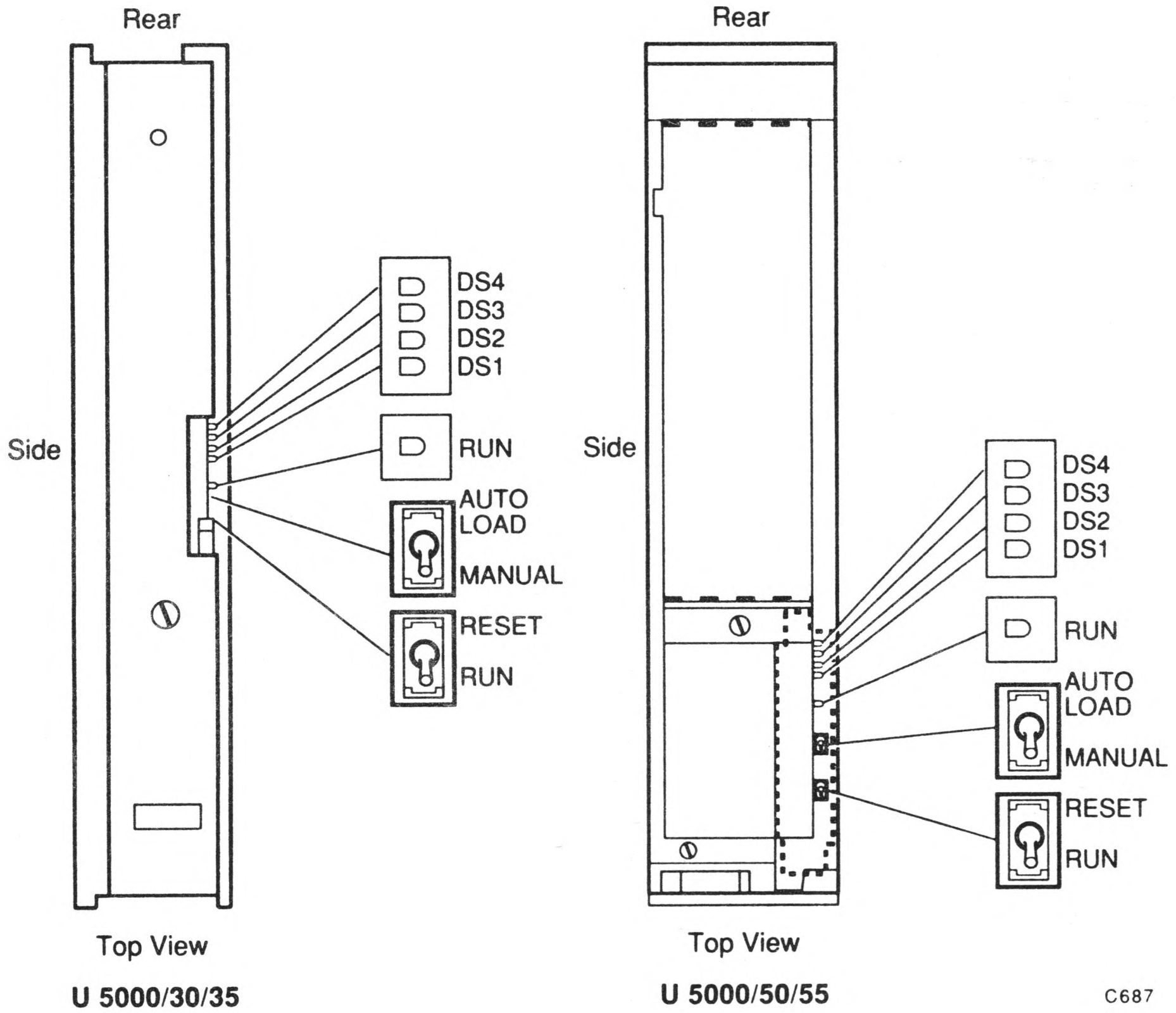

Figure 8-1. System Reset Button

The manual boot sequence begins when the MANUAL/AUTO LOAD switch is in the MANUAL position and the RESET switch is toggled.

To execute an autoboot or a manual boot, see the subsections on "Automatically Booting the Operating System" and "Manually Booting the Operating System" located in this section.

Automatically Booting the Operating System

When the system enters the power-up monitor, the system firmware checks the setting of the MANUAL/AUTO LOAD switch on the operator panel. If the switch is on AUTO LOAD, and the RESET switch is toggled, the system autoboots. Autobooting means that the appropriate operator control panel settings have been made to enable the system to power up and go through run level S directly into the single-user level without user interface.

Executing an Autoboot

To execute an autoboot at power up, your system MANUAL/AUTO LOAD switch must be set to the AUTO LOAD position.

The following steps detail the procedures for autobooting.

1. Turn the operator control panel switch to On. Refer to the "Powering Up the System" subsection in the "Initializing the System" section.

2. Verify that the MANUAL/AUTO LOAD switch is in the AUTO LOAD position.

3. Toggle the RESET button once.

   Your system should now autoboot directly to single-user level.

The following is an example of data that is displayed on the system console during the autoboot sequence:

```
CLEARING LOCAL SYSTEM MEMORY.....................................

AUTO TEST SEQUENCE
TEST:  IVT FPP PTOC PTOD EDC MMU
TEST:  MEM.....................................................
TEST:  CCH0 ATC HIO0 HIO1 HIO2 HIO3 H1O5 SCS1
```

```
LOADING "/unix" FROM DEVICE xxxx
LOAD COMPLETE
AVAILABLE MEM SIZE = $xxxxxx
SYSTEM OKAY
STARTUP FUNCTIONS COMPLETE
      .
      .
      .
Checking root file system /dev/dsk/xxxxxx: /dev/dsk/xxxxxx
     passed...
Is the date xxx xxx xx xx:xx:xx xxx xxxx correct? (y or n)

The system is going single user.  Please wait.

Unloading File Systems

The system is in single user mode.
U5000
Customer Login Banner goes in file /etc/issue.
RELEASE 3.00.01
login:
```

Manually Booting the Operating System

When the system enters the power-up monitor, the system firmware checks the setting of the MANUAL/AUTO LOAD switch on the operator panel. If the switch is on MANUAL, and the RESET switch is toggled, the system manually boots.

Executing a Manual Boot

1. Turn the operator control panel switch to On. Refer to the "Powering Up the System" subsection in the "Intializing the System" section.

2. The system must be powered up. Verify that the MANUAL/AUTO LOAD switch is in the MANUAL position.

3. Toggle the RESET button once. The screen displays the following message:

```
CHECKING LOCAL SYSTEM MEMORY.....................................
```

4. Select 3 (LOAD) from the **SELECT STARTUP FUNCTION** menu. The screen displays the following messages:

```
CLEARING LOCAL SYSTEM MEMORY.....................................
ENTER DEVICE NAME
```

5. Press < **cr** > for default. The screen displays the following message:

```
ENTER PATHNAME
```

6. Press < **cr** > for default. The screen displays the following messages:

```
LOADING "/unix" FROM DEVICE xxxx
LOAD COMPLETE
PRESS SPACE BAR TO EXECUTE -
ANY OTHER KEY TO RETURN TO STARTUP MENU
```

7. Press < **spacebar** > to continue manual boot. The screen displays the following messages:

```
AVAILABLE MEM SIZE = $xxxxxx
SYSTEM OKAY
STARTUP FUNCTIONS COMPLETE
     .
     .
     .
Checking root file system /dev/dsk/xxxxxx:  /dev/dsk/xxxxxx
    passed...
Is the date xxx xxx xx xx:xx:xx xxx xxx correct? (y or n)

The system is going single user.  Please wait.

Unmounting File Systems
```

```
The system is in single user mode.
U5000
Customer Login Banner goes in file /etc/issue.
RELEASE 3.00.01
login:
```

Bringing the System to Multiuser Mode

The following procedures are done at the console terminal.

Note: *Your screen displays may vary slightly depending upon your system configuration.*

1. To take the system from single-user to multiuser mode, at the `login:` prompt enter **startup** and press < **cr** >. Your screen displays the following messages:

```
The system is going into MULTI-USER mode.

Your terminal will be logged out.
You may then login onto any terminal connected to the
     system.

Press the <Return> key to continue, enter "x" to cancel: <.>
```

2. Press < **cr** > to continue.

```
INIT:  New run level:  2

Changing to state 2.

Mounting File Systems

Removing Temporary Files
```

```
Cron Started
! *** cron started *** pid = xxx xxx xxx xx xx:xx:xx xxxx

Error Logging Initiated

Change to state 2 has been completed.
U5000
Customer Login Banner goes in file /etc/issue.
RELEASE 3.00.01
login:
```

3. You are now in multiuser mode.

Bringing the System to Multiuser Mode Using Menus

The following procedures are done at the console terminal.

Note: *Your screen displays may vary slightly depending upon your system configuration.*

1. At the `login:` prompt, enter **sa** and press < **cr** >.

2. Enter multiuser mode by selecting **System Management** from the **UNISYS MENU SYSTEM** menu, then select **Change**. Specify **State Multi, Single User** from the resulting menu and complete the required items to change to multiuser mode. The screen displays the following messages:

```
The current system run state is Single user mode.
In the process of changing run states, you will
be LOGGED OFF the system.

Do you really want to change run state to Multi user mode?
     (y/n)
Answer (y) RETURN will proceed with change.
Answer (n) RETURN will terminate request to change run
     state.

Your response:
```

3. Enter **y** and press < **cr** > to change run state.

```
Please wait...

The system is going into MULTI-USER mode.

Your terminal will be logged out.
You may then login onto any terminal connected to the
     system.

Press the <Return> key to continue, enter "x" to cancel: <.>
```

4. Press < **cr** > to continue.

```
INIT:  New run level:  2

Changing to state 2.

Mounting File Systems

Removing Temporary files
Process accounting stopped.

Cron Started
! *** cron started *** pid = xxx xxx xxx xx xx:xx:xx xxxx

Error Logging Initiated

Change to state 2 has been completed.
U5000
Customer Login Banner goes in file /etc/issue.
RELEASE 3.00.01
login:
```

5. You are now in multiuser mode.

System Crash Recovery

An operating system is considered to have crashed when it halts without being asked to. The reason for the halt is either hardware or software related. To resume system operation, you must reboot the system. This is done by flipping the RESET button once (refer to Figure 8-1 for the RESET button location for the appropriate system).

Once the button is flipped, the system dumps the memory to a disk (a crash dump). The system initiates the bootup procedure from disk, and proceeds to take the system to single-user mode. After a system crash it is recommended that the system be halted, powered down, and then booted up again.

File system integrity is often damaged during a system crash. File system repair may be necessary prior to mounting file systems. For more information on file system repair, refer to the Administration Guide and the Administrator's Reference Manual for the **fsck**(1M) command.

9. Formatting a Disk Device

Section 9
Formatting a Disk Device

Introduction 9-1
Formatting a U 5000/30 or U 5000/50 Disk 9-5
Formatting a U 5000/35 or U 5000/55 Disk 9-9

Section 9
Formatting a Disk Device

Introduction

In the "System Installation, Restore, and Maintenance Phase 1" subsection in the "Installing System Software" section you are given the option of reformatting the disk. Formatting the disk device is a menu-driven process which performs the following functions:

- Determines disk type
- Formats and verifies the disk
- Marks factory media defective areas
- Marks unrecovered hard I/O errors for a logical block
- Builds the bad block table

Before the disk device is formatted, the information on the Media Error Log report and the System Error Log is needed.

The Media Error Log report or the Media Defect List registers the defective areas on a fixed disk. There is a separate report in the print package for the disk installed in your system. The following tables illustrate examples of a Media Error Log report and a Media Defect List.

Table 9-1. Media Error Log

xxxx			Media Error Log
HEAD	CYLINDER	SECTOR	BYTE
0	127	0	2671
2	81	0	1637
6	87	0	3029
4	103	0	8113
3	119	0	3372
5	262	0	9399

Disk Tracer # = 12345

Unit Tracer # 67690

THIS LIST MUST BE SHIPPED WITH THE UNIT

Table 9-2. Media Defect List

*** MEDIA DEFECT LIST ***

CUSTOMER DATE: 88/05/10

MODEL: B03B-4760-B003A DE SERIAL NO: 033892 SERIAL NO: 033892

NO	CYLINDER	HEAD	POS/BYTES	LEN/BITS	SCT/	PAGE-001
001	0013(0019)	09(09)	181B(06171)	008(0008)		1
002	0015(0021)	09(09)	80B6(32950)	003(0003)		1
003	0016(0022)	09(09)	73D0(29648)	004(0004)		1
004	0017(0023)	09(09)	7A8D(31373)	002(0002)		2
005	001A(0026)	05(05)	7B36(31542)	003(0003)		1
006	0025(0037)	01(01)	16D2(05842)	003(0003)		1
007	002F(0047)	05(05)	1A47(06727)	008(0008)		1
008	0036(0054)	04(04)	9FD3(40915)	00D(0013)		1
009	0066(0102)	05(05)	0B7D(02941)	004(0004)		1
010	006E(0110)	01(01)	4B0D(19213)	004(0004)		1
011	0074(0116)	09(09)	38B3(14515)	003(0003)		1
012	0079(0121)	00(00)	6E03(28163)	003(0003)		1
013	0079(0121)	02(02)	5D04(23812)	002(0002)		1
014	0088(0136)	09(09)	6FF3(28659)	004(0004)		1
015	008A(0138)	04(04)	43CA(17354)	004(0004)		1
016	0096(0150)	03(03)	2094(08340)	005(0005)		1
017	00C5(0197)	00(00)	7BBA(31674)	002(0002)		1
018	00C9(0201)	06(06)	6E52(28242)	003(0003)		1
019	00D3(0211)	06(06)	68AC(26796)	005(0005)		1

The System Error Log report is a collection of the errors logged by the operating system. This report is needed only if your system has been in operation and has logged unrecovered I/O errors for a logical block. The following is an example of the System Error Log report:

Table 9-3. System Error Log Report

```
System Error Report - Selected Items  Prepared on Jan 23 16:23 Page 1

Date/Time of 5 1/4-Hard or Flex Disk Incident:  Mon Jan 23 13:41:12 1988

      Incident Sequence Number                0000
      Subsystem/Module                        XXXX
      Function                                04. Read Blocks Command
      Hardware Status                         0d. Data Address Mark Not Found Error
      Sense Status Byte                       0151
      Logical Block                           0000008613
      Cylinder = 95. Header = 3. Sector =  9
      Retry Count                             0
      Error Diagnostics                       Recovered
      Transfer Size in Bytes                  512
      Simultaneous Bus Activity               None
      Statistics on Device to date
            No. of RAM Operations             369783
            No. of Other Operations                0
            No. of Unrecorded Errors               0
```

Assemble the Media Error Log report or the Media Defect List, and the System Error Log report for each disk device. Table 9-4 provides you with information on disk and tape devices for the U 5000/30, U 5000/35, U 5000/50, or U 5000/55 systems. Proceed to the appropriate subsection for formatting a disk device.

Table 9-4. Disk and Tape Devices

U 5000 Series System	Mass Storage Device Board	Firmware Device Name	Device Type	Level 2.00 and Above	Level 1.03 and Below
U 5000/30	MSC	h501 st01 fd01	Internal Disk Internal Tape Internal Flex	Yes No No	Yes No No
U 5000/35	SMSC & HPMSC	sda1 ssg1 sfd1	Internal Disk Internal Tape Internal Flex	Yes No No	N/A N/A N/A
	SHA & HPMSC	sd01-sd03* sd11-sd13* sd21-sd23* sd31-sd33* ss61-ss41*	External Disk External Disk External Disk External Disk External Tape	Yes Yes Yes Yes No	N/A N/A N/A N/A N/A
U 5000/50	MSC	h501 h502 st01 fd01	Internal Disk Internal Disk Internal Tape Internal Flex	Yes Yes No No	Yes No No No
	SHA	sd01 sd02-sd03 sd11-sd13 sd21-sd23 sd31-sd33 ss61-ss41	External Disk External Disk External Disk External Disk External Disk External Tape	Yes Yes Yes Yes Yes No	Yes No No No No No
U 5000/55	SMSC & HPMSC	sda1-sdb1 ssg1-ssf1 sfd1	Internal Disk Internal Tape Internal Flex	Yes No No	N/A N/A N/A
	SHA & HPMSC	sd01-sd03 sd11-sd13 sd21-sd23 sd31-sd33 ss61-ss41	External Disk External Disk External Disk External Disk External Tape	Yes Yes Yes Yes No	N/A N/A N/A N/A N/A

*On the U 5000/35, the third disk is available only if the U 5000/55 expansion cabinet is used.

Formatting a U 5000/30 or U 5000/50 Disk

1. Each user response message is displayed one at a time. Use the information on the Media Error Log report or the Media Defect List sent with your system to answer the user response messages. The disk device name on the Media Error Log report and on this display must be exactly the same. If a Media Defect List is used, it must be the appropriate one for the disk device (h*xxx* for the U 5000/30/50) being formatted.

   The following output occurs if you opted to format the disk during Phase 1 of the system installation.

   ```
   Formatting Device xxxx - Entering Factory Media Defect List

   Please locate the paperwork that was distributed with your
   system with the heading:

   xxxx      Media Error Log

   PRESS the NEWLINE or RETURN key to continue
   ```

2. Press < **cr** > to continue. The following messages appear:

   ```
   You may now enter each Head - Cylinder - Byte entry
   from this paperwork.

   Please enter the data for Bad Block Number x.

   Enter "end" if done.
   ```

Note: *Each message requiring user response is displayed one at a time. Use the information on the System Error Log report to answer the user response messages.*

3. At the following prompt, enter the value for the head number.

```
Head Number (0 to xx)?
```

4. At the following prompt, enter the decimal value for the cylinder number.

```
Cylinder Number (0 to xxxx)?
```

5. At the following prompt, enter the decimal value of the byte number.

```
Byte Number (0 to xxxx)?

Enter yes if the information below for Bad Block number x,
     is correct.

Head Number:        xx
Cylinder Number:    xxxx
Byte Number:        xxxxx

Correct (y/n)?
```

6. If the information shown for Bad Block Number *x* is correct, enter **y** and press < **cr** >. Return to Step 3. Continue with the next bad block or enter **end** and press < **cr** > if you are finished.

   If the information entered is incorrect, enter **n** and press < **cr** >. Return to Step 3 and reenter the bad block data.

7. The terminal displays the following messages:

```
Entering of Factory Bad Block Numbers Complete

If your system has been in operation using disk xxxx, and
if unrecovered I/O errors have been logged in your error log
report for this disk, then the Block Numbers from the report
should now be entered.
```

```
Enter "end" when asked for the Block Number if you have no
Unrecovered Block Numbers left to enter.

Please enter the Block Number for Unrecovered Error
     Number x.

Enter "end" if done.

Block Number (0 to xxxxxxx)?
```

8. If entries appear in your System Error Log, enter the block number of each unrecovered I/O error. Enter **end** and press < **cr** > after all of the bad block numbers are entered. If this is an initial system installation or if there are no entries in the System Error Log, enter **end** and press < **cr** >. As a result of entering **end** and pressing < **cr** >, the following messages appear on your screen:

```
Entering of Unrecovered Bad Block Numbers complete.

DISK FORMATTER
Full format enabled
Drive type:
xxxx xxxx Disk
Partition 0
Isl to be written from:  isl
User supplied media defect information from: list

Determining Disk Type

Device type is xxxx

Previous Bad Blocks:
xxxxx

Previous and Supplied Bad Blocks:
xxxxx

Formatting
```

Note: *Depending on the type of disk, the formatting procedure takes approximately 40 to 180 minutes.*

```
Certification Pass 1
(varying messages appear)

Initializing data fields

Bad Block Report
xxxxx

Initializing data fields
xxxx

Reassigning Bad Blocks

Bad Block Table:

xxxxx xxxxx

Writing Bad Block Table

Writing ISL

Writing bootblock

Disk Format Complete
```

Note: *During formatting of your disk, unrecovered READ error messages may be displayed on your terminal. This is part of the format process.*

After the disk format is successfully completed, the terminal displays progress messages indicating that the file system is being created. When the file system creation is complete, return to the "System

Installation, Restore, and Maintenance Phase 1" subsection in the "Installing System Software" section and continue with the outlined procedures.

Note: *The installation continues with no operator intervention.*

Formatting a U 5000/35 or U 5000/55 Disk

1. Each user response message is displayed one at a time. Use the information on the Media Error Log report or the Media Defect List sent with your system to answer the user response messages. The disk device name on the Media Error Log report and on this display must be exactly the same. If a Media Defect List is used, it must be the appropriate one for the disk device h*xxx* or (sd*xx* for a U 5000/35/55) being formatted.

   The following output occurs if you opted to format the disk during Phase 1 of the system installation.

```
If your system has been in operation using disk hnnn, and if
unrecovered I/O errors have been logged in your error log
report for this disk, then the Block Numbers from the report
should now be entered.

Enter "end" when asked for the Block Number if you have no
Unrecovered Block Numbers left to enter.

Please enter the Block Number for Unrecovered Error
     Number 1.

Enter "end" if done.

Block number (0 to xxxxxxx)?
```

2. If entries appear in your System Error Log, enter the block number of each unrecovered I/O error. Enter **end** and press < **cr** > after all of the bad block numbers are entered. If this is an initial system installation or if there are no entries in the System Error Log, enter **end** and press < **cr** >. As a result of entering **end** and pressing < **cr** >, the following message appears on your screen.

```
Entering of Unrecovered Bad Block Numbers complete.

DISK FORMATTER
Full format enabled
Drive type:
xxxx xxxxxxx xxxx Disk
Partition 0
Isl to be written from:  isl
User supplied media defect information from: list

Determining Disk Type
```

3. For unformatted disks, a list of drive names that are in the disk information file with 15 tracks per cylinder as defined by the formatter is displayed. Select the drive that matches your configuration by entering the number corresponding to the drive ID.

Note: *The drive ID can be found on the Media Error Log sent with the system.*

The following messages appear:

```
Device type is xxxx

Formatting
```

Note: *Depending on the type of disk, the formatting procedure takes approximately 40 to 180 minutes.*

```
Certification pass 1
(varying messages appear)

Bad Block Report

Writing Bad Block Table

Writing ISL
Writing bootblock

Disk Format Complete
```

Note: *During formatting of your disk, unrecovered READ error messages may be displayed on your terminal. This is part of the format process.*

After the disk format is successfully completed, the terminal displays progress messages indicating that the file system is being created. When the file system creation is complete, return to the "System Installation, Restore, and Maintenance Phase 1" subsection in the "Installing System Software" section and continue with the outlined procedures.

Note: *The installation continues with no operator intervention.*

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Section 10
Securing the System

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Section 10
Securing the System

Introduction

Securing the system is necessary to discourage unauthorized access to the system. The system software installation process has added 14 users to your system; that is, 14 valid login names. All users must log in on the terminal used for installation and set their private passwords. After a password is set, access to the system is only permitted by entry of a correct login name and its associated password. A password is any sequence of eight characters, except a < **Ctrl** > **d** character. All users must remember their passwords, which are neither displayed on the screen nor accessible to other system users.

The 14 users added to your system are:

- **root** — The login name **root** is reserved for the superuser, your system support person. This person is expected to have a thorough knowledge of the UNIX-based system software.

- **sa** — The login name **sa** is reserved for the system administrator. This login allows access to the menus which lead the system administrator through system administration jobs.

- **startup** — The login name **startup** is reserved for the people in your organization who are allowed to change the run level to multiuser mode without using the system administrator menus. The system administrator can change the run level to multiuser using the menus.

The system administrator may not always be present, however, when the system needs to go to multiuser mode. The **startup** login allows you to assign the run level change responsibility to one or more other users (each must know the password) without giving those other users access to your other system administrator capabilities. The password for the login **startup** must be set by **root**.

- **daemon** The login name **daemon** is reserved for the system administrator.

- **sys** The login name **sys** is reserved for the system administrator.

- **bin** The login name **bin** is reserved for the system administrator.

- **adm** The login name **adm** is reserved for the system administrator.

- **shutdown** The login name **shutdown** is reserved for the people in your organization who are allowed to shut down the system. The system administrator can shut down the system. The system administrator may not always be present, however, when the system should be shut down. The **shutdown** login allows assignment of shutdown responsibility to one or more other users (each must know the password) without giving those other users access to other system administrator capabilities.

- **maint** The login name **maint** is reserved for the Unisys-trained representative who services your system.

- **uucp** The login name **uucp** is reserved for the remote communications administrator.

- **lp** — The login name **lp** is reserved for the printer administrator.

- **nuucp** — The login name **nuucp** is reserved for controlled access by other systems.

- **sync** — The login name **sync** is reserved for the people in your organization who are allowed to write all previously unwritten system buffers out to disk, assuring that all file modifications up to that point are saved. Use this login if you want to update the disk but do not intend to shut the system down. Of course, if you are logged in, simply use the **sync** command.

- **listen** — The login name **listen** is reserved for network administration purposes.

Establishing Passwords

If you are not using the `UNISYS MENU SYSTEM` menu, proceed with the following steps to establish passwords for your logins:

1. Log in as **root**.

2. At the # prompt enter **passwd**.

3. Enter your new password when you see the `New password` prompt.

4. Re-enter your password at the `Re-enter new password` prompt. Your password is set if you have entered the same password at both password prompts. If you have entered the password differently from your first entry you receive instructions to try the process again.

Refer to the **passwd**(1) command in the User's Reference Manual to set the password for each of your logins.

Establishing Passwords Using Menus

If you are using the UNISYS MENU SYSTEM menu, use the following procedures to establish passwords for each of the 14 logins:

1. Log in as **sa**.

2. Select **System Management** from the first menu that appears.

3. From the next menu, choose **Change**.

4. When the menu resulting from the **Change** selection appears, select **Password**.

5. Enter the required information for the new password.

6. Repeat these steps until you have provided passwords for all of your logins.

7. Exit menu system.

Completing Installation

Description

Completing installation requires that you have:

- Added devices and distributed file systems
- Added printers and terminals
- Installed applications
- Added users
- Performed system backup
- Gone to multiuser mode

Although you need to do these jobs to complete installation, you may also need to perform these same tasks at any time during your administration of the system. You may later be required to add other terminals or printers to your system, install other applications, or add other users as needed. All of these jobs are performed using the Unisys Menu System provided with your system.

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Restart the Install Process

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Section 11
Restart the Installation Process

Introduction

If a fatal error condition occurs at any step during the system software installation, the process currently being performed is not successfully completed and must be restarted. When a process is not successfully completed, the following messages appear:

```
User requested abort - phase x installation

Installation process aborted

An error in the system installation process has occurred.
This phase of the installation process must be restarted.

*** WARNING:   Do not power down your system until
               this procedure completes.

Do you wish to restart at this time (y/n)?  <.>
```

Enter **y** to automatically continue the system software installation at the beginning of the phase that was interrupted. Refer to the "Automatic Restart Procedure" subsection in this section.

Enter **n** if you are continuing the system software installation at a later time. Refer to the "Manual Restart Procedure" subsection in this section.

Automatic Restart Procedure

Use the following steps to automatically restart installing the system software at the beginning of the interrupted phase.

1. The terminal displays the following messages:

```
Restarting system installation phase x

Press the <RETURN> key to continue:  <.>
```

2. Press < **cr** > to restart the system software installation at the beginning of Phase *x*, where *x* is the phase number.

   If Phase *x* is Phase 1, refer to the "System Installation, Restore, and Maintenance Phase 1" subsection in the "Installing System Software" section to continue the system software installation process.

   If Phase *x* is Phase 2, refer to the "System Installation, Restore, and Maintenance Phase 2" subsection in the "Installing System Software" section to continue the system software installation process.

   If Phase *x* is Phase 3, refer to the "System Installation and Maintenance Phase 3" subsection in the "Installing System Software" section to continue the system software installation process.

Manual Restart Procedure

Before the installation process stops, the system automatically performs an orderly shutdown. After the system is shut down, use the following steps to restart installation and ensure the integrity of your system:

1. When the streaming tape access light goes off, remove the streaming tape from the drive.

2. Turn off the Power switch on the main unit.

3. Perform the procedures described in the appropriate subsection.

Manual Restart Phase 1

Use the following procedure to restart system software installation if the Phase 1 or Phase 2 installation is not successfully completed:

1. Restart installation as if Phase 1 were never performed.

2. Start the installation with the procedures described in the "Turning On the Power" subsection in the "Initializing the System" section.

Manual Restart Phase 2

Use the following procedure to restart system software installation if the Phase 3 installation is not successfully completed:

1. Move the MANUAL/AUTO LOAD toggle switch to the MANUAL position.

2. Turn on the Power switch on the main unit. The **SELECT STARTUP FUNCTION** menu displays on your terminal screen.

3. Insert the streaming tape cartridge into the drive.

4. From the **SELECT STARTUP FUNCTION** menu, select Item 3 **(LOAD)**.

5. The terminal displays the following message:

```
ENTER DEVICE NAME
```

Enter the device name **h501** on the U 5000/30 or the U 5000/50 and **sda1** on the U 5000/35 or the U 5000/55, or **sd01** on the U 5000/35, U 5000/50, or U 5000/55, or other external disk name as available (refer to Table 9-4 in the "Formatting a Disk Device" section for other devices) then press < **cr** >. You must enter the same disk device name that was entered in Phase 1.

6. The terminal displays the following message:

```
ENTER PATHNAME
```

If the root device is the SCSI disk (**sd01**), enter the pathname **/unix** < **cr** >. If the root device is the internal disk **h501** or **sda1**, enter the pathname, **/unix** followed by a < **cr** >. (The **root** file system is created on the disk that was selected during Phase 1.)

7. The terminal displays the following messages:

```
LOADING "unix" FROM DEVICE xxxx
LOAD COMPLETE
PRESS SPACE BAR TO EXECUTE -
ANY OTHER KEY TO RETURN TO STARTUP MENU
```

Press < **spacebar** > to load the files. After the files are loaded, you are ready to continue installation.

8. Move the MANUAL/AUTO LOAD toggle switch to the AUTO LOAD position.

9. Start installation as if Phase 3 were never performed. Restart installation with the procedures described in the "System Installation and Maintenance Phase 3" subsection, in the "Installing System Software" section.

A. Crypt Utilities

Appendix A
Crypt Utilities (Optional)

Introduction

The procedures in this appendix describe Crypt Utilities installation and removal. The Crypt Utilities are distributed on one cartridge tape which contain mostly object code files.

Note: *You should make a backup of the Crypt Utilities tape. Instructions for doing so are in the "Archiving and Restoring Files" section of this document.*

Installation Procedure

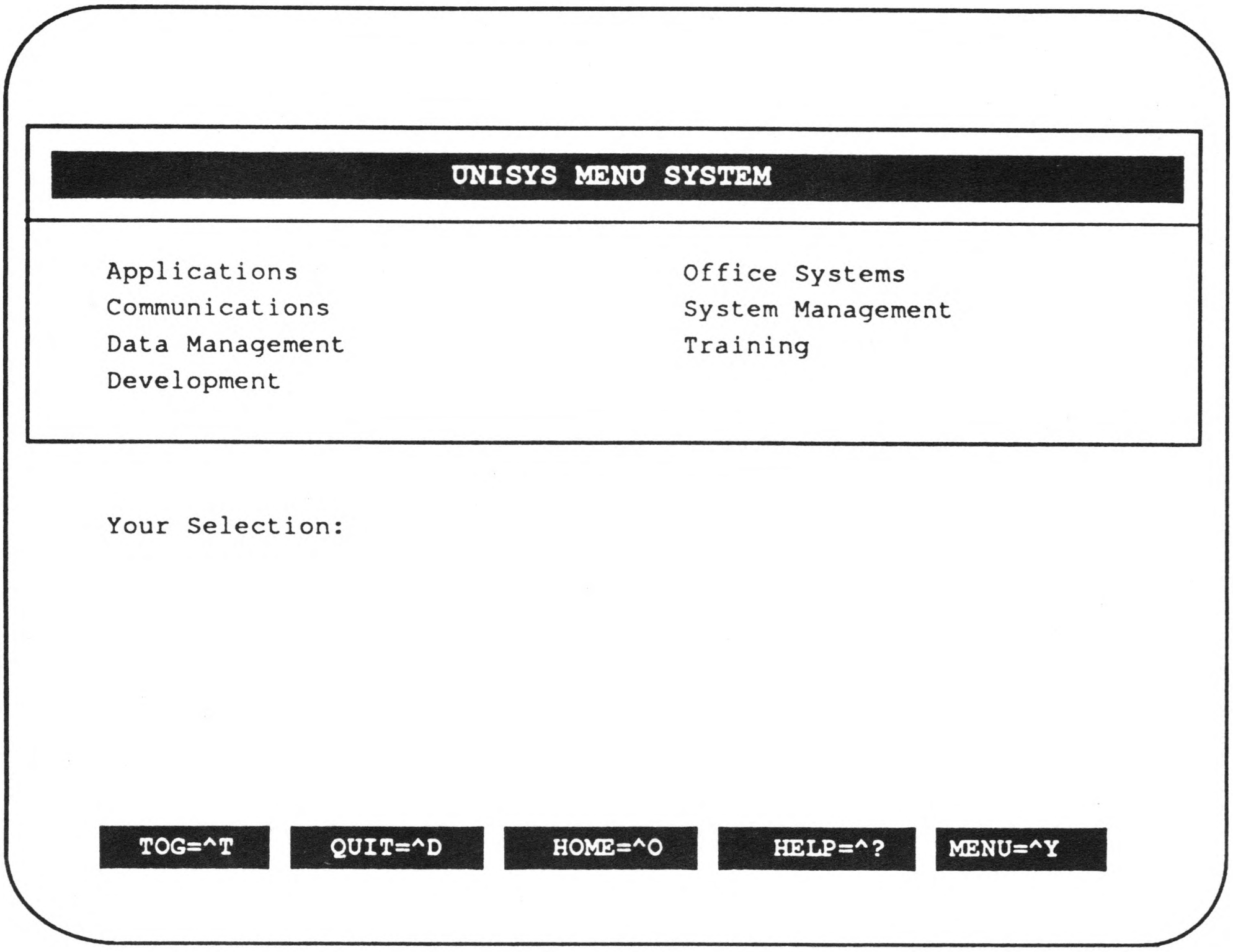
This procedure describes Crypt Utilities installation. The Crypt Utilities are distributed on one cartridge tape. Most of the utilities are object code file. Install Crypt Utilities using the following procedures:

1. The system must be in single-user mode. Use the **who** command with the **-r** option to determine the run level of the system. If the system is not at run level 0, log in as **shutdown** or log in as **root** and enter **shutdown**. Finally, enter **y** to enter single-user mode.

2. Log in as **sa**. The following default message appears:

```
Default terminal type is < uvt1224 >, Press return
  for default
Term type:

Please wait...
```

3. Your screen displays the **UNISYS MENU SYSTEM** menu:



Using the arrow keys, select **System Management** and press **< cr >**.

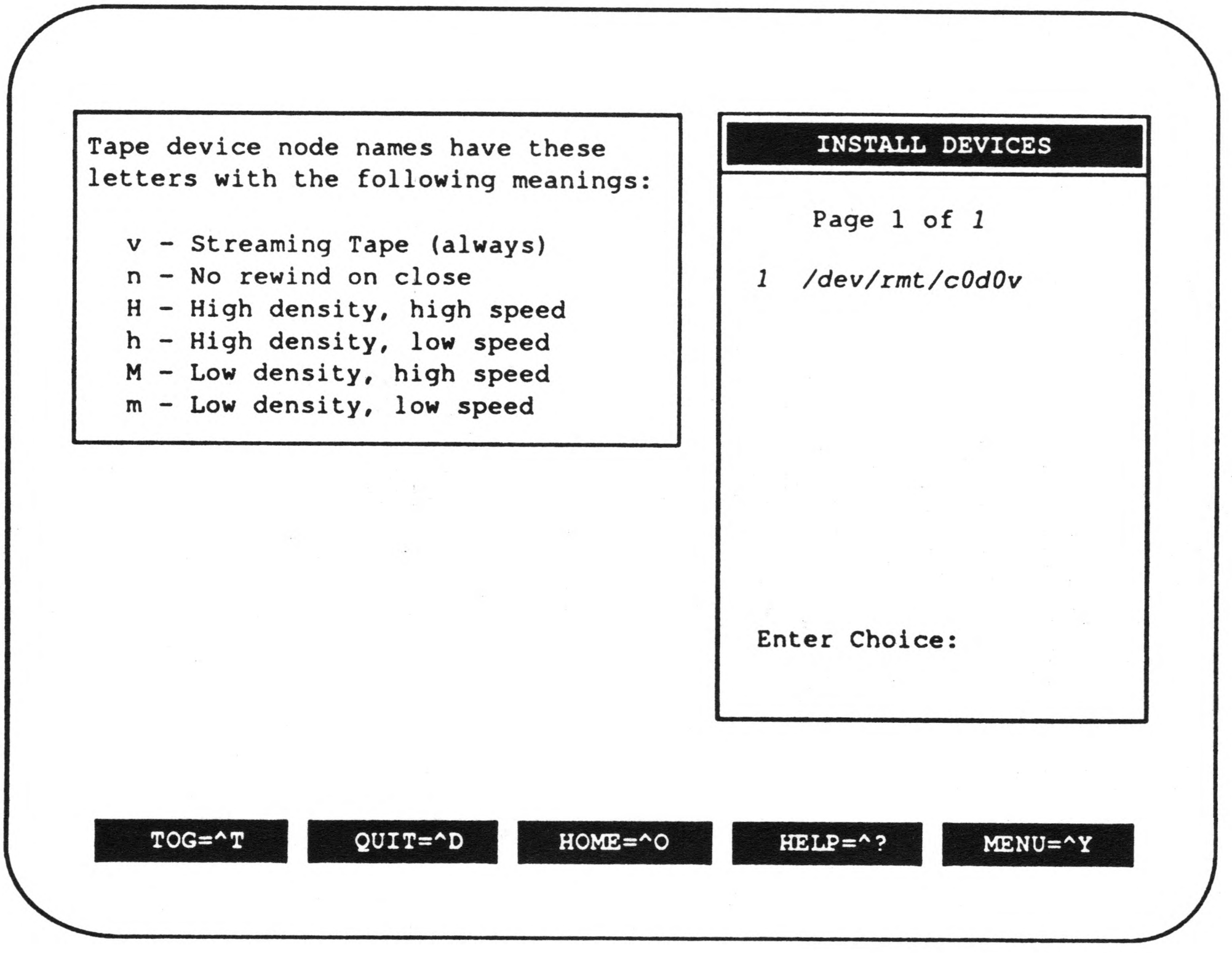
Refer to the Menu System Operations Guide for information about the menus.

4. The **SYSTEM MANAGEMENT** menu appears as follows:

```
                    SYSTEM MANAGEMENT

          Add             End             Print
          Backup          Find            Receive
          Call            Format          Remove
          Change          Install         Rename
          Check           List            Restore
          Compare         Make            Schedule
          Copy            Merge           Send
          Display         Mount           Sort
          Edit            Move            Unmount


          Your selection:

 TOG=^T   QUIT=^D   HOME=^O   HELP=^?   MENU=^Y
```

Using the arrow keys, select **Install** and press < **cr** >.

5. The **Install** menu appears as follows:



Your screen displays a device node list.

6. Select **/dev/rmt/c0d0v** from the device node list. Your screen displays the following messages:

```
*****************************************************************
* NOTICE!                                                       *
* It is recommended that upon completion of this install,       *
* you backup your release tapes.  Refer to the Software         *
* Installation Guide for your system for instructions           *
* on backing up your tapes.                                     *
*****************************************************************

Please wait . . .
** Load install tape on device:  /dev/rmt/c0d0v
```

7. Insert the Crypt Utilities cartridge tape into the tape drive. Ensure the tape is write-protected. Press < **cr** >.

8. You are prompted to retension the tape. If the tape is new, has not been used for a long time, or has been exposed to temperature extremes, you should retension it. The following message appears:

```
** Do you wish to retension the tape /dev/rmt/c0d0v?
   (y/n)-->
```

9. This initiates the installation of the Crypt Utilities product. Your screen displays the following message:

```
Reading Table-Of-Contents, please wait . . .
```

10. A list of products stored on the tape is displayed and you are prompted to select one. Crypt Utilities should be the only product on the tape. Select it by pressing < **cr** >. The following messages appear:

```
Installing CRYPT . . .

Getting product files from tape to work area, please
     wait . . .
Setting up Environment.
     .
     .
     .
Removing temporary work area, please wait . . .

Installing CRYPT/CHAIN . . .

Getting product files from tape to work area, please
   wait . . .
Creating Transfer File.
Copying files to system.
     .
     .
     .
Removing temporary work area, please wait . . .

Installation complete . . .

Rewinding tape, please wait . . .

You may now remove the tape from the drive . . .
```

Note: *This may take up to five minutes.*

11. After installation is complete, enter < **Crtl** > **d** to exit the menu system. Remove the tape from the drive.

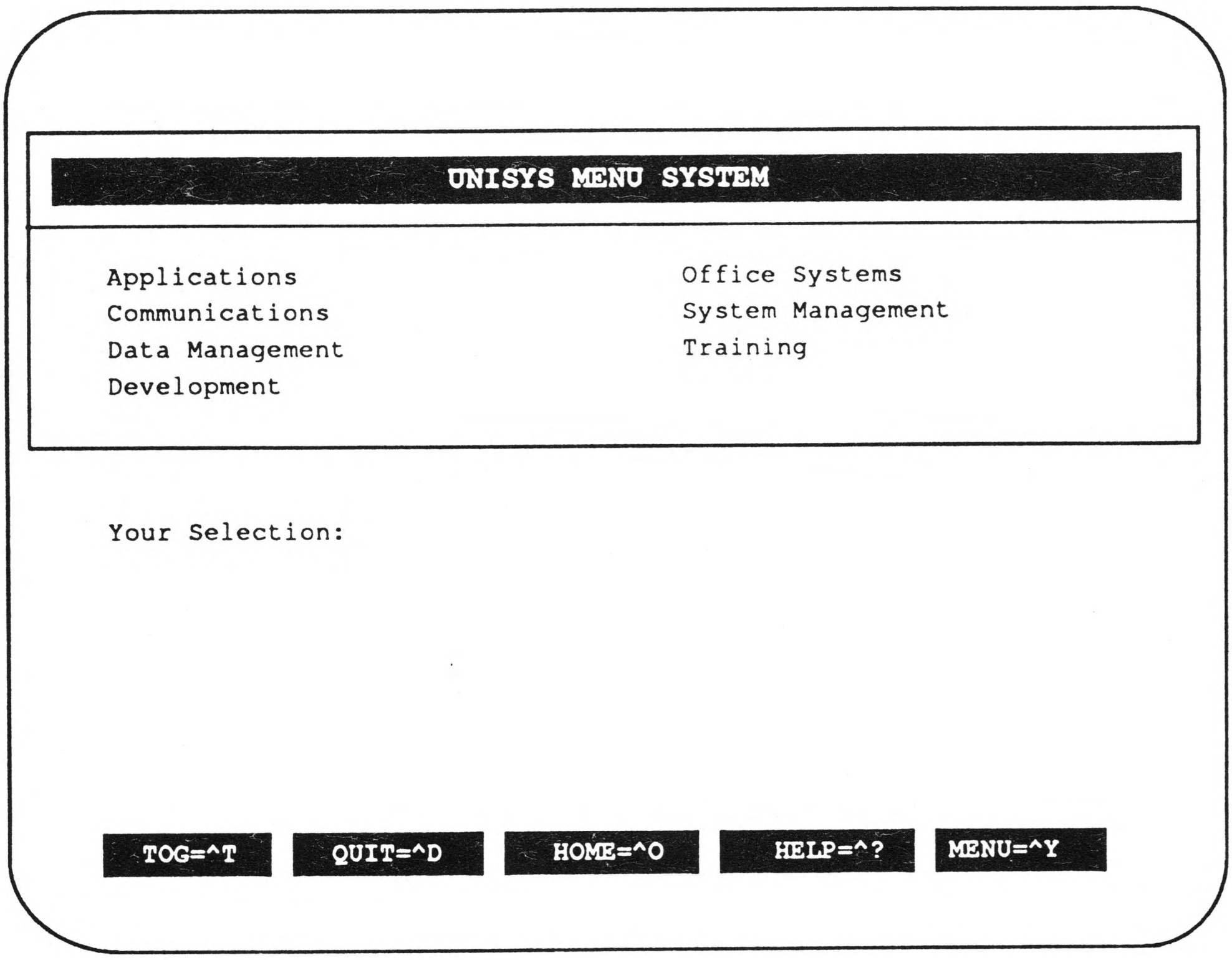
Removing Crypt Utilities

Remove Crypt Utilities using the following procedure:

1. The system must be in single-user mode. Enter **who -r** < **cr** > to determine what run level the system is at. If the system is not at run level 0 or s, log in as **shutdown** or log in as **root** and enter **shutdown**. Finally enter **logout** to log off the system.

2. Log in as **sa**.

3. Your screen displays the **UNISYS MENU SYSTEM** menu:



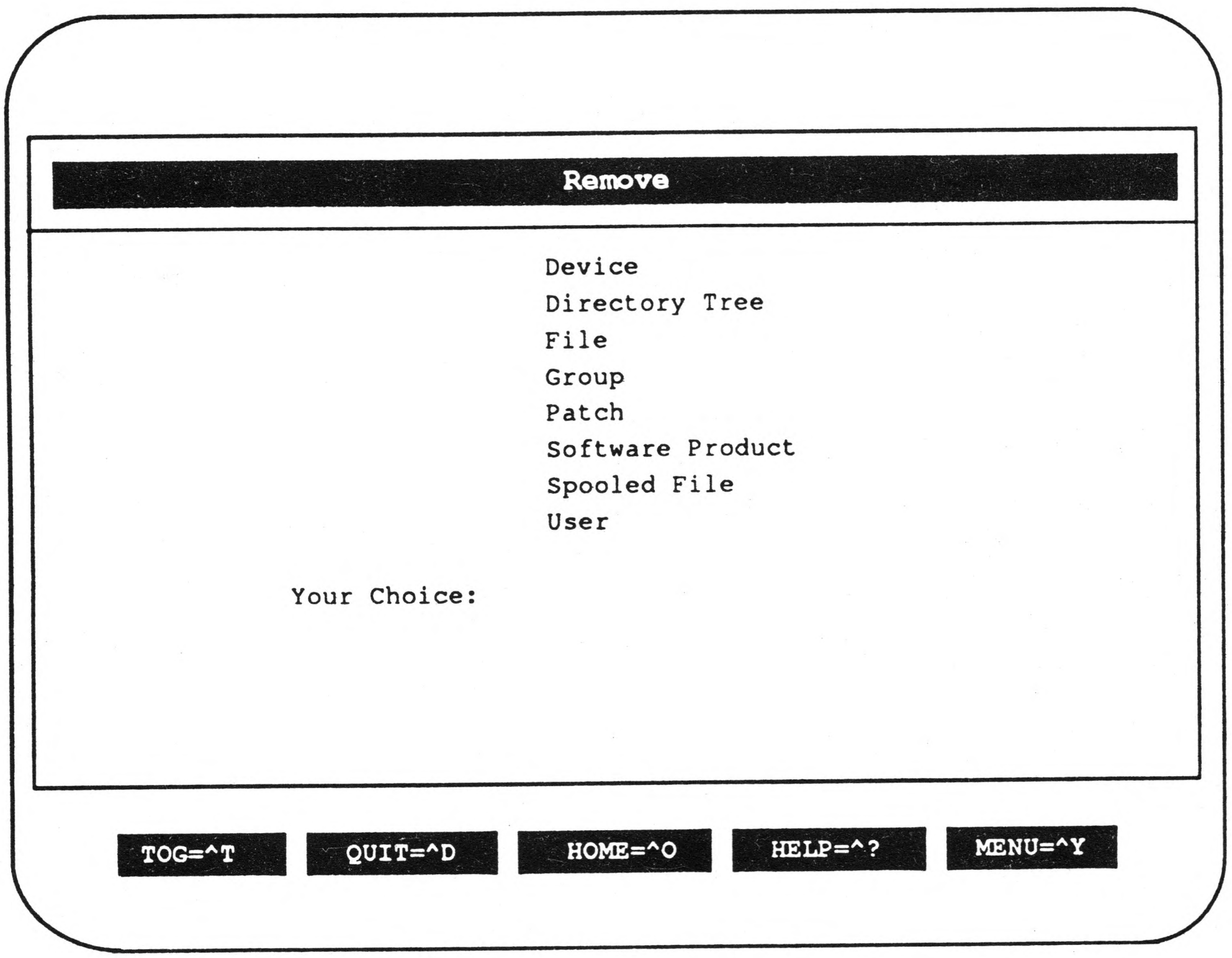
Using the arrow keys, select **System Management** and press **< cr >**.

4. The **SYSTEM MANAGEMENT** menu appears as follows:

```
                    SYSTEM MANAGEMENT

          Add              End              Print
          Backup           Find             Receive
          Call             Format           Remove
          Change           Install          Rename
          Check            List             Restore
          Compare          Make             Schedule
          Copy             Merge            Send
          Display          Mount            Sort
          Edit             Move             Unmount


          Your selection:

 TOG=^T   QUIT=^D   HOME=^O   HELP=^?   MENU=^Y
```

Using the arrow keys, select **Remove** and press **< cr >**.

5. The **Remove** menu appears as follows:



Using the arrow keys, select **Software Product** and press **< cr >**.

6. Your screen displays a list of all installed software products. Select the product(s) you want to remove by using the arrow keys to highlight the product to be removed. To view additional pages enter < **Ctrl** > **j**. To remove a product highlight the product to remove and press < **cr** >. Your screen displays the following message:

```
Do you really want to remove product <Crypt EXT>? (yes/no)
```

7. Enter **y** and press < **cr** >. Your screen displays the following messages:

```
Removing product EXT crypt . . .
Setting up Environment.
     .
     .
     .
Press RETURN to Continue

Product removal complete.
Press any key to continue . . .
```

8. After removal is complete, enter < **Ctrl** > **d** to exit the menu system.

Glossary

A

archive

(1) A copy of a file (or file system) that is put on a medium separate from any full or incremental backup the file may already be on. An archive should be recorded in a backup log along with backups. (2) To electronically remove data from a computer system and store it onto a disk or tape.

asynchronous

Relating to data transferred one character at a time at irregular and unpredictable time intervals. Each character is bracketed by one or more start and stop bits to designate the beginning and ending of the character.

auto boot mode

The computer mode of operation in which the system boots automatically when power is turned on.

B

backup

A copy of the information on the system preserved on a separate medium. *See* full backup, incremental backup, and partial backup.

bad block

A section on a storage medium that cannot store data reliably.

base tape

A tape provided for first-time system installation, to upgrade from a previous release, or to restore from current system problems.

block
The basic unit of buffering in the kernel, 1024 bytes.

boot ROM
The ROM integrated circuit that stores the program which tests and initializes the hardware and then searches for a device (floppy disk, tape, disk, in that order) that contains the operating system code. *See* read-only memory.

boot
To start the computer's operating system, so called because the kernel must "bootstrap" itself from secondary storage into an empty machine; to transfer the disk operating system program from storage on disk to the computer's working memory. No login or process persists across a boot.

bpi
An abbreviation for bits-per-inch, referring to the number of bits storable on one physical inch of tape.

C

cartridge
A storage medium that consists of a magnetic tape wound on spools housed in a plastic container.

checksum
The sum of a group of data items, either numerals or other character strings, associated with the group for checking purposes.

console
(1) The part of the computer used for communication between operator and computer. (2) The terminal an operating system communicates with when it boots.

control console
The console used to install and maintain a computer system.

corrupted file system
A file system which is not in proper order. *See* file system.

corrupted operating system
An operating system whose code is scrambled and which does not operate or communicate properly.

crash
An event whereby a system takes itself out of service because it cannot handle an error condition; occurs when the system cannot allocate resources, manage processes, or respond to system function requests, or when power is unstable.

CRYPT Utilities
A set of software utilities that performs cryptographic functions for the computer system. These utilities use algorithms that specify mathematical steps to encipher and decipher meaning.

cryptographic
Pertaining to transformation of data for the purpose of concealing its meaning.

D

daemon
A program or process that runs in the background, often perpetually, that performs a system-wide public function without user interface.

default
The value or option assumed by the computer when none has been specified by the operator.

device
Any physical input/output unit.

directory
(1) A file that comprises a catalog of filenames. (2) The organizing principle of the file system, a directory consists of entries that specify further files and constitute nodes of the directory tree. (3) An index used by the control program to locate additional blocks of data stored in separate areas of direct-access storage.

directory hierarchy
The tree of all directories, in which each is reached from the root through a chain of subdirectories. Also called directory tree.

disk
A hard platter coated with magnetic material, consisting of several round plates analogous to phonograph records, on which large amounts of data can be stored and quickly accessed.

disk corruption
Mutilation of code or data on a disk, generally caused by software or hardware failure.

diskette
A flexible disk insertable into a drive for data storage or retrieval. Also called flex disk (flex) or floppy disk (floppy).

drive
The hardware device that holds magnetic disks or tapes while they are in use.

drive capstan
A small cylindrical pulley used to regulate the speed of magnetic tape in a tape drive.

E

ejector assembly
The computer hardware component which ejects the storable media from the media drive.

error
The hardware or software condition that prevents the successful execution of a computer process.

error log
The in-memory log file which stores specific details of system errors.

error message
A message reported by the computer system of any error condition that exists.

Ethernet
The networking controller linking a computer to other host computers by means of coaxial cable.

Extension tape
An additional installable tape that contains products such as system accounting (ACCT), communications (COMM), software development tools (DEVEL), system extension utilities (EXTEN), graphics (GRAPH), system documentation (MAN), and public domain (PUBDOM).

F

fatal error
An unplanned condition resulting from execution of a program which then makes further running of the program impossible.

file
(1) A collection of related information in the form of a stream of characters. (2) A source of input or destination for output. (3) A directory entry; several directories may name the same file.

file system
The data structure of directories and subdirectories on a hard disk that organizes stored files.

firmware
(1) Computer components which are strictly speaking neither software or hardware. (2) Programs or data stored in read-only memory, not alterable by software and not lost when power is removed or lost.

flex, flex disk
See diskette.

floppy, floppy disk
See diskette.

format
(1) The arrangement or layout of data on a data medium. (2) The addressing scheme imposed on a disk (or diskette) such that data can be stored on it. (3) To impose an addressing scheme on a disk; to establish a volume home block and map both sides of the disk into tracks and sectors.

front bezel aperture
The opening on the front panel of the computer through which the operating system tape is installed.

full backup
The complete backup and archiving of everything residing on the system, including the kernel.

function key
A keyboard key which, when depressed, causes transmission of a signal not associated with a printable or displayable character that signals the system to perform a predefined function for the operator.

H

halt
The system condition in which there is no activity on the system.

hard disk
See disk.

head assembly
The computer hardware assembly that contains the device (i.e., the small electromagnet) used for reading, writing, and erasing data on a storage medium.

head loading lever
The small handle on the loading aperture which secures the cartridge tape and moves the head assembly into operating position.

head lock lever
The lever which locks the tape in place in its operating position in the head assembly so that it cannot be inadvertently ejected.

High Performance Serial Input/Output (HPSIO)
The controller that performs the function of serial input and output. *See* I/O.

HPSIO
See High Performance Serial Input/Output.

I

I/O
See input/output.

incremental backup
Backup of only the changes since the last complete backup was made; the archiving of specific files based on the last time files were modified, written, or read.

input/output (I/O)
(1) Information entering (input) or leaving (output) a system or process. A keyboard is a computer input device, while a terminal screen is an output device. (2) The path by which information enters and leaves a computer system.

integrity
In a file system, the quality of being without errors due to bad blocks.

interface
The point where two systems or devices meet or where two programs working together combine all the aspects of either program with which the other program deals.

K

kernel
(1) The core of UNIX operating system code that runs once the system is booted. (2) The resident code that implements the system calls and from which all programs run. (3) The layer of software between a process/program and the actual hardware which permits programs to reference devices by name and to control devices with high-level system calls, where operating system routines are stored.

L

link
(1) To add an entry for an existing file to a directory; converse of unlink. (2) By extension, a directory entry. (3) Any but the one primary directory entry for a given inode. (4) A pointer to a file.

load
To install software onto computer system hardware; to install a program into main memory.

loading aperature
The opening through which a cartridge tape is loaded into the computer.

logical block
A unit of data as it is handled by the software; System V handles data in 1024-byte logical blocks.

login
(1) The program that controls logging in. (2) By extension, the computing session that follows a login.

low density
Referring to storage media which has wide space distribution, which is not designed for tight storage of data bits.

M

main memory
The hard-wired RAM of a computer where programs and data are stored and where processors can readily read and write information during program execution.

MB

Abbreviation for megabyte. A measure indicating the ability of memory, for example, to store a million bytes of information.

media check

The computer process of checking the hard disk for storage integrity.

media defect list

A system list on which the user enters the bad blocks of a disk as recorded by the disk manufacturer. This list then registers defective areas on a fixed disk. May also be called media error log.

media error log

See media defect list.

memory

(1) A physical unit (board) within a computer that stores data. (2) The capacity of a computer to store information.

menu

A screen display of options from which a user may make a selection, typically by keying in a character representing the option. The choices may be windows to see the next display, actions to perform, or data choices.

modem

A device that converts digital signals generated by a computer to tone variations for voice-grade telephone line transmission, and also converts tone signals back into digital; a shortened form of the term "modulator/demodulator."

mount

To extend the directory hierarchy by associating the root of a file system with a directory entry in an already mounted file system; converse is unmount (umount).

multiuser mode
A state of the operating system in which multiple users are supported.

multiuser run level
The normal operating level for the Unisys System V operating system. *See* run level.

N

network
The hardware (and software) constituting the interconnections between computer systems, permitting electronic communication between the systems and associated peripherals.

newline
The format effector that causes a print or display position to move ahead to the first position of the next line.

O

operating system
The program for managing the resources of the computer. It takes care of such things as input/output procedures, process scheduling, and the file system, removing this burden from user programs.

OS
See operating system.

P

partial backup
A backup or archiving of part of the system.

partition
(1) To subdivide a disk into named sectors where specific information is to be stored. (2) To subdivide a block into smaller subunits that can be more easily handled. (3) A designated unit of storage space on disk.

patch tape
A cartridge that contains an improvised modification to a released operating system tape.

peripheral
An auxiliary device under control of the main computer used mostly for input, output, or storage functions (e.g., terminals, printers, or disk drives).

physical block
A unit of data as it is actually stored and manipulated. System V handles data in 1024-byte physical blocks.

physical memory
Main or processor storage; the available space in main memory. Programs are either swapped or paged into physical memory for execution. (2) Virtual memory management techniques permit programs to treat disk storage as an extension of main memory.

physical memory
See memory.

port
The connection point on a computer for a device such as a terminal or printer.

POST
See power-on self-test.

power down
The removal of power (AC or DC) from the system; the steps a computer takes when power is shut off in order to preserve the state of the processor and minimize damage to peripherals.

power up
The applying of power (AC or DC) to the system; the steps taken by the computer when power is applied or retored after a power failure.

power-on self-test (POST)
A routine of hardware confidence testing the computer goes through when the power is turned on.

process
(1) A program or part of a program during execution. (2) A numbered and tracked execution of a command or function. (3) A connected sequence of computation.

program
(1) The set of instructions given to a computer on how to do a specific task. (2) User-executable software. (3) An executable file.

Q

qualified system backup
A backup which archives all file systems except root and also directories and files which require frequent modification.

quarter-inch cartridge (QIC)
A streaming cartridge tape containing a continuous reel of quarter-inch magnetic tape on which information may be stored.

R

RAM
See random access memory.

random access memory (RAM)
A kind of memory which programs and user data can be stored to and retrieved from as needed.

read-only memory (ROM)
A kind of memory from which data (such as programs) can be read but which cannot be altered by the user accessing the memory.

reboot
See boot.

reformat
To alter the representation of data from one format to another; a procedure that erases everything on a disk, sets up a table of pointers, reserves tracks for specific file blocks, and generally prepares the disk for partitioning.

release tape
A distribution on tape medium of fixes or new functions for an existing software product.

restore
To return the system to a previous state by copying the contents of backup media onto the system. You can restore an entire system or certain files.

retension
(1) To cause a tape to be rewound in its cartridge to its proper state of tautness so that accurate recording of data can take place. (2) An option which rewinds the tape, fast-forwards it, and rewinds it again to establish correct tape tension in the cartridge.

ROM
See read-only memory

root
(1) A distinguished directory that constitutes the origin of the directory hierarchy in a file system. (2) Specifically, the origin for the file system, with the conventional pathname "/". (3) The origin of the directory hierarchy in a file system.

root device
The disk that contains the root file system.

root file system
See root.

run level
A system software configuration that allows a particular group of processes to exist. System V has seven run levels: 0 is shutdown; 1, s, or S is single-user; 2 is multiuser; 3 is multiuser for Remote File Sharing (RFS); 4 is user-defined; 5 is administration; 6 is reboot.

runtime tape
The version of the operating system tape used to run current System V software applications, as opposed to the development tape used in developing system enhancements or modifications.

S

SCSI
See Small Computer Systems Interface.

secondary memory
Memory provided by tapes and/or disks for data storage.

serial
Having to do with data bits being transmitted and received in sequential fashion on a single conductor, not transferred simultaneously as in the case of parallel transmission.

shell script
An executable file of commands taken as input to the shell.

shell
(1) The program **sh**(1), which causes other programs to be executed on command; the shell is usually started on a user's behalf when the user logs in. (2) By analogy, any program started upon logging in.

single-user mode
A state of the operating system in which only a single user is supported; corresponds to run level 1. *See* run level.

small computer systems interface (SCSI)
A standard bus interface for mass storage and peripheral devices.

special file
An inode that designates a device; there are block special files and character special files.

streaming tape
The cartridge tape inserted into the main computer tape drive, typically containing the operating system.

subdirectory
A directory created within another directory.

superuser
User id 0, which can access any file, regardless of permissions, and can perform certain privileged system calls (such as setting the clock).

swap
To move the core image of an executing program between main and secondary storage to make room for other processes.

swap space
The part of secondary store to which core images are swapped; the swap area is disjointed from the file system.

symbolic link
An inode that contains the pathname of another. References to the symbolic link become references to the named inode.

synchronous
Referring to transmission of contiguous groups of characters such that both transmitting and receiving devices are set to the same synchronization bits.

system administrator
The person in charge of configuring and maintaining system hardware and software.

system restoration
The reinstallation of the entire file system on the computer.

System V
The UNIX operating system that runs on an 80386-based computer.

T

tape
A magnetic tape cartridge for data storage which is inserted into the tape drive of the computer.

terminal
An I/O device connected to a computer system, usually consisting of a keyboard and a video display.

tpi
Abbreviation for tracks per inch, referring to the number of data recording tracks on a physical inch of disk or tape media.

track
An addressable ring of sections on a disk or diskette; each disk or diskette has a predefined number of concentric tracks, which allows the disk head to properly access sections of data.

tty
(1) Derived from the abbreviation for teletypewriter, generally used to denote a user terminal. (2) The whole area of access between a computer and its peripheral devices.

tty port
A computer port for the connection of a terminal.

tty structure
The structure containing all data needed to monitor terminal status.

U

uninterruptible power supply (UPS)
A backup power unit that provides continuous power to equipment, even in the event that the normal supply of power is interrupted.

upgrade
The modification of a hardware configuration to improve system performance.

UPS
See uninterruptible power supply.

utility, utility program
A standard, generally useful, permanently available program.

V

version
A separate program product, based on an existing one, but containing significant new code or new functions.

virtual memory
Main memory provided by way of disk storage; virtual memory management techniques permit programs to treat disk storage as an extension of main memory.

W

walking backup
A backup in which different parts of a file system are archived during different backup sessions.

write-enable
To install a device that permits the writing of data to a storage medium which is otherwise write-protected.

write-protect
To protect a storage medium against alteration by unauthorized users by physically locking out the writing of additional data.

write-protected
Referring to a storage medium protected against unauthorized uses, physically locked to the writing of additional data.

write-protect notch
The small slot on a floppy disk which must be covered in order to have the disk write-protected. Floppy disks without this notch are permanently write-protected.

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UNISYS

U 5000/35-55
Release 3.00.01
UP-14799

RESPONSE CARD

Please help us to help you. Take a moment to fill out and mail this postage-paid card so that we may better serve your needs. Thank you.

1. Is this manual (Yes No) or this library (Yes No) clear and understandable?

2. Is this manual (Yes No) or this library (Yes No) difficult?

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